

ICCD SPECKLE OBSERVATIONS OF BINARY STARS. II. MEASUREMENTS DURING 1982–1985 FROM THE KITT PEAK 4 m TELESCOPE

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ABSTRACT

This paper represents the continuation of a systematic program of binary star speckle interferometry initiated at the 4 m telescope on Kitt Peak in late 1975. Between 1975 and 1981, the observations were obtained with a photographic speckle camera, the data from which were reduced by optical analog methods. In mid-1982, a new speckle camera employing an intensified charge-coupled device as the detector continued the program and necessitated the development of new digital procedures for reducing and analyzing speckle data. The camera and the data-processing techniques are described herein. We present 2780 new measurements of 1012 binary and multiple star systems, including the first direct resolution of 64 systems, for the interval 1982 through 1985.

I. INTRODUCTION

This paper is a summary of observational results from a program of binary star speckle interferometry carried out at the Mayall 4 m telescope on Kitt Peak during the interval June 1982 through November 1985. These observations were obtained with a speckle camera that incorporates an intensified charge-coupled device (ICCD) as the detector. All data were reduced digitally using a combination of hardware and software specifically developed for the efficient processing of large volumes of speckle data. Paper I in this series (McAlister *et al.* 1987) presented the results from this camera and analysis system for a survey of bright stars with the 3.6 m Canada-France-Hawaii telescope on Mauna Kea. Our binary star speckle-interferometry program is a second-generation continuation of an effort carried out between 1975 and 1981 on Kitt Peak, in which a photographic speckle camera was used to produce nearly 2800 measures of more than one thousand binary star systems. Those results appeared in a series of 11 papers, the last of which is that of McAlister *et al.* (1984).

A catalog of all modern interferometric observations of binary stars has been compiled by McAlister and Hartkopf (1984) with a completeness date of January 1984. Speckle observations dominate the catalog; more than 3200 measurements had been accumulated by several groups since Gezari *et al.* (1972) first observationally demonstrated the applicability of Labeyrie's method to binary stars. The mean separation of the catalog entries is $0''.32$, while the median separation is $0''.21$. Approximately 700 of these measures, or 21% of the data, are for systems with angular separations between $0''.021$ and $0''.100$. The catalog contains 118 systems first resolved interferometrically, and there can be no doubt that speckle interferometry has become a major contributor to modern binary star astrometry.

We present here 2780 measures of 1012 binary stars, including the first direct resolution of 64 systems. These new observations double the overall contribution of our program

and provide a baseline of almost ten years in the measurement of orbital motion for many systems. We continue to place on our observing program objects which can benefit most from the high angular resolution and high accuracy obtainable from speckle observations at large telescopes. Such objects include potentially resolvable spectroscopic binaries; known visual binaries with small angular separations and rapid motions; occultation and astrometric binary stars; stars that indicate possibly resolvable duplicity through composite spectra, suspected variable radial velocity, and abnormal colors and luminosities; and survey samples of such groups as the bright stars, the nearby stars, Hyades cluster members, and high-velocity stars. Our observing program currently is comprised of some 3000 stars. Although the ICCD speckle camera has been found to be capable of observing stars as faint as $V = +16$, most of the program objects are brighter than $V = +10$. This routine limiting magnitude still represents a gain of 3 mag over the limit of the previously used photographic speckle camera.

II. THE SPECKLE CAMERA SYSTEM

The camera system employed in the speckle program of the Center for High Angular Resolution Astronomy (CHARA) at Georgia State University has been described in its developmental stage by McAlister *et al.* (1982). For the sake of completeness and to provide an updated description of the equipment in its actual operational configuration, we present here a comprehensive discussion of the instrumentation for collecting and reducing speckle data.

The heart of the camera is an RCA SID 53601-X0 all-buried channel "thick" CCD for which RCA had modified its TC 1160 camera in order to provide a standard RS 170 video output from the chip. The RCA camera operates the chip in a frame-transfer mode, shifting an "A" register image into a covered "B" register for readout while another "A" image is being accumulated. The effective photosensitive area of the CCD is thus reduced by 50% to an array of 244×248 pixels. The readout-noise problem is completely eliminated by intensifying the CCD; this was accomplished by fiberoptically coupling an ITT F-4144 dual microchannel-plate intensifier to the CCD. The MCP tube was pro-

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vided by ITT with an 18 mm diameter photocathode. A D-14 fiberoptic plug was bonded by RCA directly to the "A" register of the CCD in order to provide for coupling to the MCP intensifier. Our early experience with this method was disheartening in that the first CCD failed irretrievably during its testing phase and the second device failed in a similar manner in January, 1983, after working flawlessly for one year. With the assistance of RCA, who provided us with the last research-quality CCD of its type in stock, we traced both failures to differential expansion between the CCD substrate and the bonding material for the input fiberoptic that resulted in the failure of the chip preamplifier circuit. Successful bonding using a specially prepared ceramic collar was carried out for us by Lyle Broadfoot and his colleagues at the Earth and Space Sciences Institute in Tucson, Arizona, and the third device has operated continuously since late 1983.

The overall characteristics of the ICCD include a maximum gain of one million, with peak sensitivity at λ 500 nm and 50% of peak sensitivity still available at λ 400 and λ 670 nm. The pixels are 30μ square and are contiguous. The detector is electronically shuttered by gating the photocathode voltage in synchronism with the video camera. This provides exposure times between 1 and 15 ms, a useful feature when confronted with rapidly varying seeing. The detector has high mechanical stability, is free from image distortions associated with other types of image tubes, and is capable of detecting single photon events. It is ideally suited to binary star astrometry requiring an accuracy of better than 1%, and its sensitivity and near linearity make it an effective detector for photometric purposes. Unfortunately, the CCD has a prominent fixed pattern involving some 15 pixels that contributes to autocorrelation algorithms not employing flat

fielding, such as the vector autocorrelation we use, and diminishes the detector's effectiveness on faint objects. We hope to secure a cleaner chip at a future date.

A schematic of the CHARA speckle camera system is shown in Fig. 1. The camera-head assembly contains optics for increasing the effective focal length in order to produce a highly magnified field of view and for collimating the beam in order to eliminate focusing variations due to variable thickness of filters and dispersion-compensation prisms. At the Mayall telescope, a choice from among three microscope objectives provides scales on the detector of 0.0161, 0.0087, 0.0051 arcsec per pixel corresponding to fields of view of 3.96, 2.14, and 1.25 arcsec square. We normally use a $20\times$ microscope objective corresponding to the middle level of magnification. For object acquisition at telescopes not possessing an independent acquisition capability, the camera head was designed so that the microscope objective and collimating lens can be removed from the beam while an additional acquisition lens is inserted to provide a field of view with a diameter of nearly 1 arcmin. At the 4 m telescope, this capability is only used at the beginning of an observing run when it is necessary to provide a fiducial mark on the telescope television acquisition monitor for the small speckle field of view. A filter wheel assembly provides Strömgren u , v , b , y filters, an intermediate-bandwidth filter centered on y , and a clear position. Data are routinely obtained through the Strömgren y filter. Design considerations for the atmospheric-dispersion-compensating Risley prisms are discussed in the description of the original photographic speckle camera used at Kitt Peak (Breckinridge *et al.* 1979). The prisms were designed to permit complete dispersion compensation for zenith angles of up to 65° over bandwidths of 15 nm.

GSU SPECKLE CAMERA SYSTEM

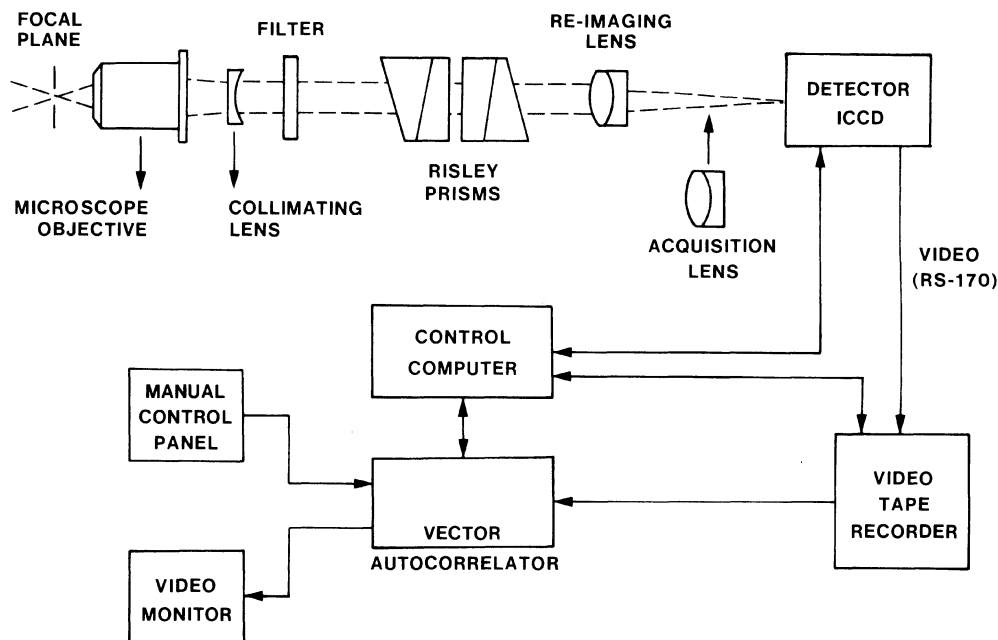


FIG. 1. The GSU ICCD speckle camera system is shown here in schematic form.

All camera-head functions including filter selections, Risley-prism setting, speckle or acquisition field selection, exposure times, integration times, detector gain, and the starting/stopping of the videotape recorder are completely controlled by a Motorola 6809 microprocessor under the direction of an Osborne 1 host computer. This arrangement permits the rapid and accurate setup of the camera from the control room for each object to be observed. As a backup to the Osborne 1, the microprocessor can read/write a Burr-Brown hand-held control/display panel that is otherwise used for local control of the camera head when necessary. This is especially useful during camera installation and testing in the telescope observing cage.

The videotape recorder selected for recording speckle frames is a version of a VHS recorder marketed by RCA and extensively modified by Gyr Corporation. The modifications included replacing the capstan drive motors with microprocessor-driven stepper motors and tape servo, changes to the recording heads, and the provision of a variable tape canting system. The recorders we purchased were then further modified to include an RS 232 interface port for remote operation by means of the camera-head microprocessor. These modifications of the recorder allow data taking at normal video rates, playback at various rates including still field, and complete computer control for automated data recording as well as possibly for automated data processing.

A typical observing sequence involves the acquisition of an object by the telescope operator, who then centers it in the speckle camera field of view. Speckle data are then accumulated typically for 60 s; during this time 1800 speckle frames will be recorded on video tape. An example of one such speckle frame is shown in Fig. 2 [Plate 43]. This entire cycle lasts approximately two to three minutes, permitting an observing rate of at least 20 objects per hour. The storage of our 3000-star observing list on the telescope-control computer gives some relief to the otherwise harried telescope operator.

Processing of the vast volume of data generated by the speckle camera is critically dependent upon a hardwired vector autocorrelator (VAC) built to our specifications by Digital Television Imagery, Inc., of Tucson, Arizona. The VAC operates by digitizing an incoming video frame and storing the (x, y) coordinates of only those pixels whose intensities are above an adjustable threshold level. A two-dimensional histogram of all coordinate-pair differences is then calculated and stored in a $128 \times 128 \times 16$ -bit autocorrelogram memory. Autocorrelograms from individual frames are continuously coadded, and the result is displayed to the operator. This windowed autocorrelogram can be offset from the origin in order to measure known binaries. As described in Paper I, the autocorrelator was incorporated into the observing activities in the spring of 1985, following construction of an interface that enables the autocorrelogram memory to be read by a DEC Pro 350 computer that stores the autocorrelograms on floppy diskettes for further processing. Prior to that time, the VAC could only be operated in conjunction with a Perkin-Elmer 3220 minicomputer at Georgia State University, and all data processing required the playback of data recorded by the video cassette recorder, a device that now only serves for data archival purposes.

The CHARA speckle camera, whose detailed design and construction was carried out by Technical Development Corp., of Tucson, Arizona, has proved to be an extremely reliable instrument that has fulfilled our specifications in all respects. The camera has been transported to and used at six

different telescopes during some 200 nights without suffering any mechanical or electronic failures that could not be repaired prior to the start of the next night's observing.

III. AUTOCORRELOGRAM REDUCTION TECHNIQUES

Techniques developed for reduction of autocorrelograms (ACGs) have been outlined by Hartkopf (1984) and, more recently, by Hartkopf *et al.* (1985). The methods described here have been developed with two major objectives in mind. Foremost, of course, is accuracy; our goal is to derive astrometric information accurate to $\pm 0''.0003$ or better for binary stars ranging in separation from a few seconds of arc down to the Rayleigh limit ($0''.025$ for a 4 m telescope). We have succeeded in reaching accuracies of this order for brighter binaries and accuracies of approximately $0''.001$ for all but the faintest pairs. Our second major objective is, of necessity, speed. As mentioned above and shown in Table I, observing has been streamlined to the point where 200 or more objects can be observed in a single night; as many as 1200 observations may be obtained in one Kitt Peak observing run. The speckle camera is also used in separate projects at other facilities, including observing runs averaging five nights per month on the Perkins 72 in. reflector at Lowell Observatory. It is essential, therefore, that data reduction be streamlined as well, in order to keep up with the continual influx of new observations. Most of the reduction steps described below are, in fact, carried out in a batch process, with human interaction usually needed only for selecting the binary peaks to be fitted. Alternatively, the entire reduction process may be carried out interactively for "problem" ACGs resulting from poorer observing conditions and/or fainter stars. All data reduction is carried out with the CHARA VAX 11/750 computer and image-processing system at GSU.

The memory of our VAC is limited to 16 bits (65K, and

TABLE I. Observing run statistics.

Run	Dates included	Number of nights	Number of observations	Number of resolved measures	Notes
Jun 82	1982.5027— 1982.5088	3	244	83	
Oct 82	1982.7542— 1982.7661	5	518 (+ 56)	219	
Jan 83	1983.0471— 1983.0511	2	254 (+ 53)	112	
	1983.0610— 1983.0703	4	512 (+ 29)	167	ISIT
Jun 83	1983.4141— 1983.4342	8	750 (+ 57)	334	
Sep 83	1983.7097— 1983.7163	3	460 (+ 28)	302	
Jan 84	1984.0520— 1984.0636	5	692 (+ 48)	251	
May 84	1984.3724— 1984.3870	6	866 (+ 165)	339	
Sep 84	1984.7007— 1984.7129	5	454 (+ 65)	229	
Dec/Jan 84/85	1984.9965— 1985.0114	6	460 (+ 356)	100	
Jun 85	1985.4729— 1985.4730	1	3	3	Lowell 24"
Jun/Jul 85	1985.4812— 1985.4985	6	369 (+ 383)	206	
Nov 85	1985.8350— 1985.8545	8	856 (+ 359)	435	
Total		62	6438 (+ 1599)	2780	

65 535 counts); any pixel exceeding this limit will “burst” and reset to zero. The central spike of an ACG will often burst one or more times; for a very bright star, less than a minute’s worth of data may cause the entire central portion of the ACG to burst many times. The first step in reduction, therefore, must be to “deburst” the data—i.e., to add 65K counts to each pixel as many times as is necessary to restore it to its correct value. Each row of pixels is scanned from both ends toward the center to look for the sudden drop of $> 65K$ that indicates bursting. This pixel is increased by $n \times 65K$, then the next inner pixel is compared to it, etc. The entire process is repeated for each column in a similar manner. Safeguards added to the reduction program recognize and correct most noise spikes and dropouts as well.

This debursting technique seems to work quite well at restoring nearly all pixels to their correct value. It can, however, break down for those pixels encompassing the central spike of the ACG; here the pixels have often burst so many times that it is impossible to correct them. This is not usually of major concern, however, since these pixels typically correspond to separations within the Rayleigh limit. Part (a) of Fig. 3 [Plate 44] illustrates an autocorrelogram of ADS 7158 after debursting. The central spike has been somewhat clipped in order to show the secondary peaks more clearly.

The second reduction step consists of removing the broad seeing-induced background slope from the ACG. Its purpose is twofold. First, this Gaussian-like background can noticeably alter the measured centroid of a secondary peak, even for a wide binary. The background slope varies greatly with distance from the center of the ACG, often in a nonradial manner owing to incomplete correction for atmospheric dispersion or to turbulence-induced asymmetry in the atmospheric point-spread function. Second, removal of this bright background is often necessary to permit detection of secondary peaks as faint as 1% of the background level.

Several background-fitting methods have been tested, including FFT’s, radial least-squares polynomials, and a rotate-and-subtract algorithm. The technique now in use is a simple “boxcar” smoothing algorithm, which, in addition to being the most straightforward to calculate, seems to give the most consistently reliable results. A “smoothed” version of the ACG is created by replacing each pixel’s value with the average value of an array centered on the pixel. The size of this array is adjustable; typical boxcar sizes are 9×9 or 11×11 pixels. This smoothed ACG is then subtracted from the original—the result is shown in Fig. 3(b).

The next step is to identify features thought to be secondary peaks arising from duplicity and to determine their centroid positions. A cursor is moved to each peak; the program then (1) scans about that position for a local maximum, (2) picks an array of points centered on that maximum, typically 3×3 or 5×5 pixels in size, (3) calculates a least-squares paraboloidal fit to these points, and (4) plots cross-sectional slices through that paraboloid, indicating the centroid position. The operator can then (1) accept the fit, (2) try fitting a different size array of points about the peak, (3) record an “eyeball-fit” cursor position (usually necessary only for very weak peaks or noisy data), or (4) reject the peak altogether. Measured (X, Y) centroid positions are finally converted to (ρ, θ) using scaling factors determined by the calibration techniques described in Sec. IV.

This rather simple reduction and analysis procedure may not provide the maximum sensitivity to large magnitude differences (we are currently experimenting with ways to de-

tect very faint peaks against high background levels), but it has proved a very efficient and dependable means for processing some 15 million speckle frames containing nearly one terabyte of information.

IV. CALIBRATION

Calibration of our speckle data is accomplished by two different methods. The primary calibration continues to be made by placing a double-slit mask over the entrance aperture of the telescope and observing a bright single star—in effect turning the telescope into a Michelson interferometer (see McAlister 1977). The ACG of one such calibration observation is shown in Fig. 4 [Plate 45]; the background has been removed by the boxcar technique described in Sec. III. The separations of these well-defined peaks depend only on the geometry of the telescope/camera system; that is, on the focal lengths of the optical components, the physical separations of the slits in the mask, and the location of the mask in the beam. Thus a scaling factor can be determined that is limited only by the accuracy to which these quantities are known. Calibration accuracies of $\pm 0.6\%$ in separation and $\pm 0.2^\circ$ in position angle have been obtained (McAlister 1977). Variations in calibration occur from one observing run to the next owing to changes in the precise placement of the speckle camera at the Ritchey-Chretien focus of the KPNO 4 m telescope. The range of these variations amounts to approximately 2% in angular separation and 0.5° in position angle. It is therefore necessary to secure calibration data at least once during every observing run.

A secondary calibration of our speckle data is made by observing bright binary systems whose orbits are either very well determined or of extremely long period (see McAlister and Hartkopf 1983 for a list of suggested binary “standards”). These observations give us a useful check on the double-slit calculations. More importantly, they also provide scaling factors when the speckle camera is used on telescopes not equipped with calibration masks, or for which focal lengths, etc., are not known to sufficient accuracy. Because of orbital motion, use of binary stars as a primary calibration can be risky, and we strongly recommend that an external primary calibration procedure be used in order to fully exploit the high precision inherent in speckle interferometry.

V. THE MEASUREMENTS

The observational material incorporated in this paper was accumulated on 61 nights at the 4 m Mayall telescope between June 1982 and November 1985. In Table I we summarize the observing statistics. All data were obtained with the ICCD camera as described in Sec. II, except those between 1983.06 and 1983.07, for which an ISIT acquisition camera borrowed from KPNO was used in place of the failed CCD. We suspect that the ISIT measures may be of somewhat degraded accuracy in comparison with the ICCD values due to the spatial distortions inherent in ISITs. We include in this paper three measurements obtained at the 24 in. refractor of the Lowell Observatory during an experimental exercise aimed at demonstrating the practicability of speckle interferometry at refracting telescopes. While the measurement of HR 7417 (β^1 Cyg = McA 55 Aa) for 1985.4729 does show a systematic departure from the 4 m measurements that bracket it, we find that speckle interferometry works quite well at refracting telescopes. The fourth column

in Table I lists the number of stars for which speckle data were obtained in the observing interval. Numbers shown in this column in parentheses indicate additional observations that were secured in separate efforts, such as for minor planet duplicity, and, primarily, a sample of potential *HIPPARCOS* targets, that have been reduced and analyzed but have not been incorporated in the present paper. The number of actual binary star measurements extracted from the data and given in column five of Table I shows that only 43% of the data actually resulted in detection and measurement of double stars. This yield fraction is due to the exploratory nature of much of the program, in which we attempt to resolve systems never previously measured as "visual" binaries. Although this approach inevitably leads to a large collection of

negative results, it also produced the first resolution of 116 binary stars with the new camera.

Binary stars are traditionally given a designation based upon the name of the discoverer. This practice works well in visual micrometry programs where a single person is responsible for the entire effort. Speckle-interferometry programs tend to be dependent on a group of people, and our program has evolved into a team effort since the retirement of the original photographic speckle camera. We have therefore chosen to give the designation "McA" to the 76 binaries first resolved by the photographic system, and "CHARA" to the 116 new systems detected with the ICCD speckle camera. Table II is a collection of basic information for the McA stars, while such parameters are given in Table III for the

TABLE II. Binary stars first resolved by the KPNO photographic speckle camera.

McA Number	HR/DM Number	Name	HD Number	SAO Number	ADS Number	α, δ (2000)	V Mag	Spectral Classif.	Disc. Sep.	Binary Type		
1	Aa	HR 132	51 Psc	2913	109262	449	00323+0657	5.7	B9.5V	0.271	Occn	
2	HR	233	-----	4775	11424	-----	00507+6415	5.4	B9.5V+G0III-	0.045	Spm,SB	
3	HR	439	-----	9352	22389	-----	01334+5820	5.7	K0Ib+B9V	0.133	Spm	
4	+08	0316	-----	12483	110295	-----	02026+0905	7.8	G5IV	0.224	Occn	
5	HR	649	ξ^1 Cet	13611	110408	-----	02130+0851	4.4	G6II-IIICN	0.056	SB,Occn	
6	HR	640	55 Cas	13474	12180	-----	02145+6631	6.1	B9V+G0II-III	0.077	Spm	
7	HR	763	31 Ari	16234	93022	-----	02366+1226	5.7	F7V	0.078	SB,Occn	
8	HR	788	12 Per	16739	55793	-----	02422+4012	4.9	F9V	0.055	SB	
9	HR	825	-----	17378	23637	-----	02495+5705	6.3	A5Ia	0.186	Spm,Var	
10	Aa	HR 838	41 Ari	17573	75596	2159	02500+2716	3.6	B8Vn	0.298	SB	
11	Aa	HR 1043	-----	21427	24062	2563	03301+5922	6.1	A2V	0.325		
12	HR	1129	-----	23089	12891	-----	03461+6321	4.8	G0III+A3V	0.045	Spm	
13	Aa	HR 1252	36 Tau	25555	76425	2965	04044+2406	5.5	G0III+A4V	0.041	Occn,Spm	
14	Aa	HR 1331	51 Tau	27176	76541	-----	04185+2135	5.7	F0V	0.080	SB,Hyad	
15	HR	1411	θ^1 Tau	28307	93955	-----	04286+1557	3.8	K0IIbFe-0.5	0.116	SB,Occn,Hyad	
16	HR	1497	τ Tau	29763	76721	-----	04422+2257	4.3	B3V	0.173	Occn,SB	
17	HR	1569	6 Ori	31283	94197	-----	04548+1125	5.2	A3V	0.334	Var	
18	Aab,c	HR 1788	η Ori	35411	132071	4002	05244-0224	3.4	B1V+B2e	0.044	SB,Var	
19	Aa	HR 1808	115 Tau	35671	94554	4038	05271+1758	5.4	B5V	0.095	Occn	
20	HR	1876	ϕ^1 Ori	36822	112914	-----	05348+0929	4.4	B0III	0.053	SB	
21	+38	1250	-----	37614	58334	-----	05415+3811	8.3	A+G	0.141	Spm	
22	HR	2001	-----	38735	150814	-----	05474-1032	6.0	A4V	0.159	SB,Var	
23	HR	2002	132 Tau	38751	77592	-----	05490+2445	4.9	G8IIIV	0.043	Occn	
24	HR	2130	64 Ori	41040	95166	-----	06034+1942	5.1	B8III	0.066	Occn,SB	
25	+26	1082	-----	41600	77980	-----	06074+2640	7.0	B9.5V	0.097	Occn	
26	HR	2304	-----	44927	78349	-----	06256+2320	6.1	A2Vn	0.054	Occn	
27	HR	2425	53 Aur	47152	78571	-----	06383+2859	5.8	B9npEu	0.064	Occn	
28	HR	2605	40 Gem	51688	78947	-----	06595+2555	6.4	B8III	0.080	Occn	
29	+37	1645	-----	52823	59741	-----	07043+3734	6.6	A0V	0.158	Spm	
30	Aa	HR 2846	63 Gem	58728	79403	6089	07277+2127	5.2	F5V+F5V	0.044	Occn,SB	
31	Aa	HR 2861	65 Gem	59148	79434	6119	07298+2755	5.0	K2III	0.038	SB	
32	HR	2886	68 Gem	60107	97016	-----	07336+1550	5.3	A1Vn	0.184	Occn	
33	HR	3109	53 Cam	65339	14402	-----	08017+6019	6.0	A2pSrCrEu	0.044	SB,Var	
34	HR	3880	19 Leo	84722	98767	-----	09474+1134	6.4	A7Vn	0.046	Occn	
35	HR	4365	73 Leo	97907	99525	-----	11158+1318	5.3	K3III	0.068	SB	
36	HR	4544	-----	102928	138445	-----	11510-0520	5.6	K0IIICN-0.5	0.173	Occn,SB	
37	HR	4689	η Vir	107259	138721	-----	12199-0040	3.9	A2IV	0.118	SB,Occn,Var	
38	Aa	HR 4963	θ Vir	114330	139189	8801	13100-0532	4.4	A1IVs+Am	0.485	SB,Occn	
39	+16	2642	-----	126269	101011	-----	14241+1617	6.8	F5V+A2	0.053	Spm	
40	HR	5472	-----	129132	83458	-----	14403+2158	6.1	G0V	0.057	SB	
41	-14	4182	-----	136406	159188	-----	15210-1522	7.5	K0III	0.365	Occn	
42	CE	HR 5985	β^2 Sco	144218	159683	9913	16054-1948	4.9	B2V	0.127	Occn	
43	-21	4279	-----	144641	184141	-----	16077-2124	7.9	G5	0.115	Spm	
44	HR	6237	-----	151613	30076	-----	16453+5647	4.8	F2V	0.041	SB	
45	HR	6388	-----	155410	46524	-----	17095+4047	5.1	K3III	0.039	SB	
46	-19	4547	-----	155095	160326	-----	17103-1926	7.0	B8.5V	0.127	Occn	
47	HR	6469	-----	157482	46664	-----	17217+3958	5.5	F9Vn:	0.036	SB	
48	Aa	HR 6485	ρ Her	157779	66000	10526	17237+3709	4.1	B9.5III	0.286		
49	Aa	+18	3500	-----	163640	103226	10905	17564+1820	6.6	A0III	0.088	
50	HR	6697	-----	163840	85575	-----	17572+2400	6.3	G2V	0.110	SB	
51	-20	5068	-----	167570	186575	-----	18167-2032	7.1	G5IV+A5	0.260	Occn,Spm	
52	-17	5245	-----	171347	161631	-----	18351-1653	7.0	A2V	0.156	Spm	
53	Aa	HR 7059	5 Aql	173654	142606	11667	18464-0058	5.9	A2Vm	0.127	Spm,SB	
54	+12	3818	-----	178452	104515	-----	19083+1215	7.5	G5IV+A2	0.118	Spm	
55	Aa	HR 7417	β^1 Cyg	183912	87301	12540	19307+2758	3.1	K3II+B0.5V	0.444	SB,Spm	
56	+58	1929	-----	184467	31745	-----	19311+5835	6.6	K1V	0.117	SB	
57	HR	7478	ϕ Cyg	185734	68637	-----	19394+3009	4.7	G8III-IV	0.030	SB	
58	+18	4252	-----	187321	105288	-----	19487+1852	7.1	G0I+A	0.408	Spm	
59	Aa	+35	3930	-----	190429	69324	13312	20035+3602	6.6	O5.8	0.118	
60	Aa,B	HR 7744	23 Vul	192806	88428	-----	20158+2749	4.5	K3IIICN-1	0.241		
61	+49	3310	-----	196089	49782	-----	20331+4950	6.7	A0+G0V	0.055	Spm	

TABLE II. (continued)

McA Number	HR/DM Number	Name	HD Number	SAO Number	ADS Number	α, δ (2000)	V Mag	Spectral Classif.	Disc. Sep.	Binary Type
62	HR 7922	-----	197226	70367	-----	20410+3905	6.5	B6III	0.121	SB
63 Aa	HR 7963	λ Cyg	198183	70505	14296	20474+3629	4.5	B5Ve	0.048	SB
64	HR 7990	μ Aqr	198743	144895	-----	20527-0859	4.7	A3m	0.049	SB
65 Aa	HR 8047	59 Cyg	200120	50335	14526	20598+4732	4.7	B1ne	0.215	SB,Var
66 Aa	HR 8059	12 Aqr	200497	145064	14592	21041-0549	7.3	A3V	0.071	
67 Aa	HR 8119	I Cep	202214	33210	14749	21118+6000	5.6	B0II	0.052	
68	HR 8264	ξ Aqr	205767	145537	-----	21377-0751	4.7	A7V	0.033	SB,Occn
69 Aa	HR 8417	ξ Cep	209790	19826	15600	22037+6437	4.4	A3m	0.055	SB
70 Ab	HR 8485	-----	211073	72155	15758	22139+3944	4.5	K3III	0.524	SB
71	HR 8572	5 Lac	213310	52055	-----	22295+4743	4.4	M0II+B8V	0.122	SB,Spm
72	+80 0731	-----	215319	3769	-----	22394+8123	6.9	F8+A5V	0.170	Spm
73	HR 8704	74 Aqr	216494	165359	-----	22535-1137	5.8	B9III	0.071	Occn,SB
74 Aa	HR 8866	94 Aqr	219834	165624	16672	23191-1327	5.1	G5IV	0.212	SB
75 Aab	HR 9003	ψ And	223047	53355	-----	23460+4625	4.9	G5Ib+A0V	0.265	Spm
75 Aac	HR 9003	ψ And	223047	53355	-----	23460+4625	4.9	G5Ib+A0V	0.145	Spm
76	HR 9064	ψ Peg	224427	91611	-----	23578+2508	4.7	M3III	0.191	

TABLE III. Binary stars first resolved by the GSU ICCD speckle camera.

CHARA Number	HR/DM Number	Name	HD Number	SAO Number	ADS Number	α, δ (2000)	V Mag	Spectral Classif.	Disc. Sep.	Binary Type
1 Aa	+52 0019	-----	761	21202	148	00122+5337	7.0	F0	0.403	
2	+83 0020	-----	5621	171	-----	01037+8436	6.7	F5V	0.139	Spm
3	+67 0131	-----	9015	11787	-----	01308+6722	9.2	K0	0.247	
4 Aa	HR 526	-----	11031	37536	1438	01492+4754	5.8	A3V	0.141	SB
5	HR 643	60 And	13520	37867	-----	02132+4414	4.8	K3.5IIIBa0.5	0.187	SB
6 Ap	HR 707	ι Cas	15089	12298	1860	02290+6724	4.5	A5pSr	0.496	SB,Var
7	+43 0576	-----	17245	38335	-----	02475+4416	6.7	F5V+A	0.159	Spm
8	HR 952	-----	19789	93327	-----	03114+1303	6.1	K0IIp	0.533	Occn
9	+28 0532	UX Ari	21242	75927	-----	03266+2843	6.5	G5IV/V+K0IV	0.432	SB,Var
10	HR 1036	-----	21335	93436	-----	03271+1845	6.6	A3V	0.076	Occn,Hyad
11	+23 0496	-----	23157	76103	-----	03437+2339	7.9	A9V	0.232	Occn
12	+23 0523	-----	23489	76173	-----	03465+2415	7.4	A2V	0.230	Occn
13	+19 0662	-----	25811	93759	-----	04063+1952	8.6	F0	0.074	Occn
14	+23 0635	-----	284163	-----	-----	04119+2338	9.4	K0	0.138	SB,Hyad
15	Ross 29	G1 165	-----	-----	-----	04120+5016	15.5	M5	0.989	Nearby Star
16	HR 1375	-----	27742	76585	-----	04235+2059	6.0	B8IV-V	0.182	Occn
17	+14 0721	vB 96	285931	94009	-----	04340+1510	8.7	K1	0.147	SB,Hyad
18 Aa	HR 1458	88 Tau	29140	94026	3317	04357+1010	4.4	A3	0.104	SB
19	HR 1528	-----	30453	57444	-----	04493+3235	5.9	A8m	0.041	Spm,SB
20	+14 0770	vB 120	30712	94159	-----	04506+1505	7.7	G5	0.072	SB,Hyad
21	+43 1315	-----	36948	40487	-----	05373+4404	7.5	F8+A0V	0.125	Spm
22	HR 2273	7 Mon	44112	133114	-----	06197-0749	5.3	B2.5V	0.055	SB
23	+23 1346	-----	44926	78348	-----	06255+2327	6.8	G5IV	0.104	Occn
24	+16 1273	-----	48954	96097	-----	06468+1646	6.7	F5+A5V	0.489	Occn,Spm
25	+02 1483	-----	51566	114692	-----	06580+0218	7.7	A2+G0V	0.910	Spm
26	HR 2837	61 Gem	58579	79391	-----	07269+2015	5.9	F2Vn	0.030	SB,Occn
27	+08 1791	-----	59604	115545	-----	07309+0833	7.2	A2+G0V	0.261	Spm
28	+20 2159	40 Cnc	73666	80336	-----	08402+2001	6.6	A1V	0.425	Overlum
29	+54 1323	-----	233666	27352	-----	09423+5328	9.3	G0	0.354	Halo
30	HR 3973	14 Sex	87682	118111	-----	10068+0537	6.2	K1III	0.132	Occn
31	+13 2274	-----	91498	99185	-----	10341+1222	7.7	A3V	0.192	
32	+12 2266	-----	93993	99321	-----	10511+1135	6.8	K0III	0.429	Occn
33	HR 4291	58 Leo	95345	118610	-----	11006+0337	4.8	K1IIICN-0.5	0.235	Occn
34 Aa	+30 2097	-----	95515	62361	-----	11018+2952	7.2	K0III	0.242	
35	+22 2411	-----	-----	-----	-----	11516+2207	9.3		0.176	Halo
36	-04 3155	TY Vir	103036	138451	-----	11518-0546	8.2	K2	0.234	Halo
37	HR 4668	-----	106760	62928	-----	12165+3304	5.0	K0.5IIIB	0.248	SB,Var
38	HR 4891	38 Vir	111998	139022	-----	12532-0333	6.1	F5V	0.442	Occn
39 Aa	HR 4921	44 Vir	112846	139086	8727	12597-0348	5.8	A3V	0.107	Occn
40	HR 5298	96 Vir	123630	158385	-----	14090-1020	6.5	G8III	0.287	Occn
41 AC	HR 5323	14 Boo	124570	100925	-----	14141+1258	5.5	F6IV	0.190	SB
42 Aa	+02 2844	-----	128563	120569	9323	14373+0217	6.6	F8V	0.210	
43	HR 5612	-----	133484	45348	-----	15031+4439	6.7	F6IV	0.166	*
44	-12 4227	-----	135681	159146	-----	15168-1302	7.1	A2V	0.193	Occn,SB,Var
45 Aa	+27 2477	-----	136176	83756	9578	15183+2649	6.6	F8V	0.333	Astrom,Var
46	HR 5715	-----	136729	29487	-----	15201+5158	5.7	A4V	0.217	*
47	HR 5818	-----	139493	29588	-----	15360+5438	5.7	A2V	0.514	*
48	-19 4165	-----	139364	159402	-----	15384-1955	6.8	F2V	0.271	Occn
49	HR 5858	26 τ Ser	140729	101712	-----	15447+1716	6.1	A0V	0.130	* SB
50 Aa	HR 5856	-----	140722	183772	9775	15462-2804	6.5	F2IV	0.216	
51	HR 5895	36 Ser	141851	140801	-----	15513-0305	5.1	A3Vn	0.126	*
52 Aa	+13 3091	49 Ser	145958	102018	9969	16133+1333	6.7	G8V+K0	0.209	
53 Aa	HR 6103	ξ CrB	147677	65254	-----	16221+3053	4.9	K0III	0.153	Hyad
54	-16 4280	-----	147473	159888	-----	16229-1701	6.7	F0V	0.081	Occn
55	HR 6123	25 Her	148283	65290	-----	16254+3724	5.5	A5V	0.195	*

TABLE III. (continued)

CHARA Number	HR/DM Number	Name	HD Number	SAO Number	ADS Number	α, δ (2000)	<i>V</i> Mag	Spectral Classif.	Disc. Sep.	Binary Type	
56	Ba	HR 6194	36 Her	150379	121774	10149	16406+0412	6.9	A3IV	0.145 *	
57		HR 6213	39 Her	150682	84543	-----	16416+2655	5.9	F2III	0.126 *	SB
58		HR 6286	-----	152812	46349	-----	16533+4725	6.0	K2III	0.292 *	
59		HR 6317	-----	153653	121995	-----	17005+0635	6.6	A7V	0.128 *	SB
60	Aa	HR 6383	-----	155328	30262	10369	17083+5051	6.5	A1V	0.168 *	
61		HR 6412	-----	156208	122224	-----	17162+0211	6.2	A2V	0.136 *	
62	Aa	+68 0946	-----	-----	17568	-----	17365+6823	9.2	MB	0.292	Astrom
63		HR 6571	79 Her	160181	85264	-----	17375+2419	5.6	A2Vn	0.080 *	
64		HR 6641	-----	162132	46954	-----	17471+4737	6.4	A2Vs	0.142 *	SB
65		HR 6656	30 Dra	162579	30591	-----	17491+5047	5.0	A2V	0.120 *	
66		-19 4777	-----	163680	160947	-----	17582-1916	8.7	K2	0.392	Occn
67	Aa	HR 6781	100 Her	166045	85753	11089	18078+2606	5.9	A3V	0.106 *	Var
68		HR 6851	-----	168199	103578	-----	18180+1347	6.3	B5V	0.054 *	
69		-16 4836	-----	168701	161385	-----	18218-1619	7.9	K0III+A	0.089	Spm
70		HR 6906	-----	169820	103709	-----	18259+1458	6.4	B9V	0.118 *	
71		HR 6928	-----	170200	123516	-----	18280+0612	5.7	B8III-IV	0.078 *	SB
72	Aa	HR 6941	-----	170580	123571	11399	18301+0404	6.7	B2V	0.149 *	
73		HR 6956	-----	170902	161580	-----	18323-1439	6.4	A4V	0.040 *	
74		HR 6977	-----	171623	103879	-----	18352+1812	5.8	A0Vn	0.151 *	SB
75		HR 6984	-----	171780	67134	-----	18352+3427	6.1	B5Vne	0.241 *	SB,Var
76	Aa	HR 6987	-----	171834	123693	11496	18367+0640	5.5	F3V	0.141 *	SB
77	Ca	HR 7053	e ⁺ Lyr	173607	67315	11635	18444+3937	5.1	A8Vn	0.184 *	Var
78		HR 7035	-----	173117	187216	-----	18448-2501	5.8	B5:V	0.084	Occn
79		HR 7091	-----	174369	86462	-----	18492+2503	6.6	A1V	0.219 *	SB
80		HR 7109	-----	174853	104196	-----	18520+1358	6.1	B8Vnn	0.104 *	
81		HR 7110	-----	174866	142741	-----	18530-0935	6.3	A7Vn	0.178 *	
82	Aa	HR 7165	FF Aql	176155	104296	11884	18582+1722	5.4	F8Ib	0.154	SB,Var
83		HR 7263	-----	178476	86843	-----	19081+2142	6.2	F3V	0.177 *	
84	Aa	HR 7272	-----	178911	67879	12101	19091+3436	6.7	G1V	0.090 *	
85	Aa	HR 7307	-----	180555	104668	12248	19164+1433	5.6	B9.5V	0.051 *	
86	Aa	HR 7386	-----	182807	87190	-----	19254+2455	6.2	F7V	0.181 *	
87		HR 7436	-----	184603	68499	-----	19336+3846	6.6	A3Vn	0.137 *	
88	Aa	HR 7480	45 Aql	185762	143678	12775	19407-0037	5.7	A3IV	0.084 *	
89		HR 7554	V1339 Aql	187567	125116	-----	19503+0754	6.5	B2.5IVe	0.057 *	Var
90		HR 7571	v505 Sgr	187949	163080	-----	19531-1436	6.5	A0V+F8IV	0.291 *	SB,Var
91		HR 7684	-----	190781	49152	-----	20045+4814	6.0	A2IV	0.340 *	
92		HR 7677	-----	190590	88163	-----	20050+2313	6.5	A5Vn	0.050 *	
93		HR 7755	-----	192983	32400	-----	20157+5014	6.3	A2Vn	0.176 *	
94	Aa	HR 7744	23 Vul	192806	88428	-----	20158+2749	4.5	K3IIICN-1	0.067	
95		HR 7752	-----	192934	69720	-----	20161+3854	6.3	A1V	0.176 *	
96	Aa	HR 7767	-----	193322	49438	13672	20181+4044	5.8	O9V	0.047 *	
97		HR 7801	-----	194215	189264	-----	20254-2840	5.8	K3V	0.121	SB
98		-2416056	-----	194810	189321	-----	20285-2410	6.9	G0V	0.234	Occn
99	Aa	HR 7840	-----	195482	106195	13946	20312+1116	7.1	B8V	0.325	
100	Aa	HR 7949	e Cyg	197989	70474	14274	20462+3358	2.5	K0III	0.067	SB
101		HR 7994	-----	198802	163953	-----	20531-1134	6.4	G1V	0.169 *	
102		HR 8246	-----	205314	51019	-----	21329+4959	5.8	A0V	0.043 *	SB
103		HR 8257	-----	205539	89815	-----	21353+2812	6.3	F0IV	0.184 *	SB
104		HR 8274	-----	206027	89870	-----	21387+2530	6.2	G9III	0.099 *	
105		+08 4714	EE Peg	206155	126971	-----	21400+0911	6.8	A4V+F5V	0.252	SB,Var
106		HR 8455	-----	210460	107706	-----	22103+1937	6.2	G0V	0.465	
107		HR 8507	-----	211575	146004	-----	22181-0014	6.4	F3V	0.104 *	
108		HR 8538	β Lac	212496	34395	-----	22236+5214	4.4	G8.5IIbCa1	0.219	
109		HR 8553	-----	212978	72358	-----	22274+3949	6.1	B2V	0.185 *	
110		HR 8574	38 Peg	213323	72406	-----	22300+3234	5.6	B9.5V	0.155 *	
111		HR 8581	-----	213429	146135	-----	22313-0633	6.1	F7V	0.094 *	
112	Aa	HR 8603	8 Lac	214168	72509	16095	22359+3938	5.7	B2Ve	0.042 *	SB,Var
113		+68 1319	-----	214606	20179	-----	22373+6913	7.5	A3+G0V	0.487	Spm
114		HR 8617	-----	214558	52211	-----	22383+4511	6.4	G2II+A4V	0.114 *	
115		HR 8690	14 Lac	216200	52412	-----	22504+4157	5.9	B3IV:e	0.965 *	Var
116		HR 8734	-----	217107	146412	-----	22583-0224	6.2	G8IV	0.457	Occn

CHARA stars. References to the discovery papers for the McA stars can be found in the catalog of McAlister and Hartkopf (1984). The CHARA stars include 52 objects resolved in our bright-star survey (Paper I) and 64 systems appearing in this paper. An asterisk by the discovery separation in Table III indicates the stars from Paper I. The last column in Tables II and III shows whether the object is a spectroscopic (SB), composite spectrum (Spm), occultation (Occn), or astrometric (Astrom) system, or whether it is a member of the Hyades cluster (Hyad), a variable star, an overluminous star, or a halo-population star. The halo stars were selected from the sample of extreme metal-poor stars of Bond (1980). The average *V* magnitude of the CHARA stars is 6.8 when the bright star sample of Paper I is excluded. This value is 1.1 mag fainter than the average value

of *V* for the McA stars. Even though we can now detect faint binaries, as demonstrated by the discovery of the new companion to Ross 29, the ICCD speckle camera continues to be productively used on brighter stars.

The new speckle measurements of binary stars are presented in Table IV, where we continue the format used in previous papers and the catalog of McAlister and Hartkopf (1984) except that we give HD numbers on the identification line, omitting SAO numbers. The coordinates are for equinox of 2000.0, but the position angles have not been corrected for precession and hence are based upon the equinox for the epoch of observation shown as the fractional Besselian year. The reader should also keep in mind that autocorrelation analysis of speckle data leads to a 180° quadrant ambiguity in position angle. We have selected the appropri-

TABLE IV. Binary star speckle measurements.

ADS 32	STF 3056 AB	225220	00046+3416	ADS 434	STT 12	2772	00318+5432
	1983.7104	143.92	0.695		1882.7545	185.98	0.474
	1984.7069	143.0	0.695		1982.7576	185.8	0.473
	1985.8429	142.5	0.704		1983.7104	187.1	0.461
ADS 61	STF 3062 AB	123	00062+5826		1984.0547	187.1	0.456
	1982.7601	292.5	1.399		1984.0602	186.8	0.461
	1983.7104	294.6	1.420		1984.7015	187.3	0.457
	1984.7069	296.6	1.415		1984.9991	187.4	0.455
	1985.8483	298.7	1.426		1985.8402	187.3	0.457
ADS 102	STF 2	431	00091+7943	+26 0072	Cou 547	2854	00320+2740
	1982.5087	24.8	0.606		1984.0627	247.2	0.131
	1982.7576	25.0	0.616		1985.8455	198.3	0.054
	1983.0688	24.2	0.603	ADS 449	McA 1 Aa	2913	00323+0657
	1984.0547	24.8	0.616		1983.7104	92.6	0.168
	1984.7015	25.2	0.621		1984.7014	88.4	0.138
	1985.8429	24.0	0.636		1984.9991	87.4	0.130
ADS 143	STF 7	709	00116+5558	ADS 463	Ho 3	2993	00335+4006
	1985.8483	212.6	1.290		1985.8401	124.8	0.264
ADS 147	Bu 255	744	00119+2825	ADS 490	Ho 212 AB	3196	00352-0336
	1983.7104	77.4	0.524		1982.7603	243.9	0.255
	1985.8429	76.0	0.525		1982.7657	244.6	0.257
ADS 148	Bu 1026	761	00122+5337		1983.7104	260.7	0.287
	1982.5060	34.7	0.127		1984.7014	273.7	0.287
	1982.7576	33.6	0.135		1984.9991	277.3	0.280
	1983.7104	43.3	0.117		1985.4985	285.7	0.269
	1984.0547	53.2	0.129	ADS 493	STT 15	3210-1	00358+4901
	1984.7015	55.6	0.084		1983.7104	317.7	0.209
	1985.8455	86.2	0.053		1984.0547	316.5	0.210
ADS 148	CHARA 1 Aa	761	00122+5337		1984.7015	317.8	0.211
	1982.7576	0.0	0.403		1984.9991	318.5	0.210
	1983.7104	3.9	0.322		1985.8401	317.5	0.212
	1984.0547	27.5	0.210	ADS 504	A 914	3304	00366+5608
ADS 197	A 1256 AB	1082	00152+4406		1983.7104	34.7	0.433
	1982.5088	62.7	0.137		1984.7015	34.6	0.430
	1983.7104	67.1	0.126		1985.8402	33.4	0.433
	1984.7015	65.7	0.114	HR 178	WRH	3883	00416+2438
	1985.8401	67.8	0.110		1982.7601	16.1	0.172
	1985.8455	67.9	0.110		1984.9991	29.4	0.142
ADS 207	STF 13	1141	00163+7657	ADS 684	Bu 232 AB	4777	00504+5038
	1982.5088	59.8	0.892		1985.8403	241.4	0.836
	1982.7600	58.6	0.893	HR 233	McA 2	4775	00507+6415
	1983.0688	58.5	0.886		1984.7015	342.8	0.028
	1984.0547	58.4	0.885		1984.9993	329.8	0.049
	1985.8429	57.8	0.902	ADS 701	A 1808	4934	00516+2238
ADS 238	A 1803 AB	1317	00173+0852		1983.7106	169.8	0.079
	1985.8429	142.4	0.051		1984.9993	168.3	0.093
ADS 243	A 803	1360	00182+7256		1985.8457	171.5	0.101
	1983.0688	272.0	0.180		1985.8538	173.5	0.102
	1983.7104	276.7	0.189	ADS 732	A 2307	5143	00532+0406
	1984.0547	275.8	0.176		1983.0690	40.1	0.311
	1984.7015	278.1	0.192		1983.7106	43.8	0.325
	1985.8402	279.1	0.196		1985.8313	44.0	0.326
	1985.8456	278.5	0.198	+42 0196	Cou 1654	5178	00542+4318
ADS 328	Hu 506	1976	00243+5201		1983.0690	108.6	0.159
	1983.7104	46.1	0.172		1983.7106	109.6	0.159
	1984.0547	45.6	0.173		1985.8403	105.6	0.165
	1984.7015	47.0	0.169	ADS 746	STT 20 AB	5267	00546+1912
	1984.9991	47.2	0.168		1982.7601	216.9	0.448
	1985.8402	47.8	0.168		1983.0690	215.6	0.444
	1985.8455	47.6	0.168		1983.7106	216.3	0.448
HR 108	B 1909	2475	00283-2020		1984.9966	214.2	0.447
	1982.7657	175.7	0.071		1985.8484	212.4	0.455
ADS 382	A 1504 AB	2471	00287+3718	ADS 749	Hu 802	5259	00549+4924
	1983.7104	38.5	0.525		1983.0690	217.4	0.336
	1984.7014	38.3	0.521		1983.7106	219.0	0.350
	1985.8401	38.0	0.529		1984.7017	219.2	0.343
					1984.9965	218.1	0.345
					1984.9993	217.5	0.349
					1985.8456	218.7	0.345

TABLE IV. (continued)

ADS 755	STF 73 AB	5286	00550+2338	ADS 955	Bu 303	6886	01096+2348
	1982.7601	263.95	0.7633		1983.0690	291.93	0.7643
	1983.0690	265.9	0.630		1983.7159	290.8	0.651
	1983.7159	268.3	0.644		1984.7043	290.7	0.649
	1985.8484	274.5	0.671		1985.8374	290.3	0.652
					1985.8484	290.3	0.652
ADS 784	Bu 1099 AB	5408	00568+6022	ADS 950	Egg 1 Aa	6843	01100+5202
	1982.5088	314.1	0.205		1984.7045	150.6	0.058
	1982.7601	312.0	0.201		1985.8403	152.0	0.058
	1983.0690	312.7	0.217	ADS 1039	Hu 520	7695	01178+4946
	1984.0547	315.6	0.210		1983.0690	164.3	0.290
	1984.7015	317.4	0.213		1983.7106	165.6	0.294
	1984.9965	318.2	0.219		1984.7043	165.6	0.296
	1984.9993	317.8	0.214		1985.8430	164.4	0.302
	1985.8402	319.8	0.228	ADS 1040	STF 102 AB	7710	01178+4901
ADS 819	A 1902	5781	00593-0040		1983.0690	279.0	0.485
	1983.7106	176.5	0.285		1983.7106	280.0	0.489
	1985.8403	179.3	0.302		1984.7043	279.8	0.487
ADS 832	A 926	5851	01011+6021		1984.9966	280.1	0.492
	1983.7104	321.2	0.376		1985.8430	279.2	0.492
	1985.8402	322.5	0.375	+32 0229	Cou 663	7854	01187+3245
+34 0164	Cou 854	5955	01014+3535		1983.0690	173.9	0.313
	1983.7106	14.6	0.131		1983.7106	175.5	0.302
	1985.8457	7.4	0.132		1984.7043	175.2	0.306
ADS 836	A 2901	5839	01015+6921		1985.8430	174.7	0.311
	1982.7600	52.2	0.395	ADS 1081	STF 113 A,BC	8036	01198-0029
	1983.7104	54.2	0.398		1982.7629	14.5	1.588
	1984.0547	53.2	0.394		1982.7657	14.4	1.580
	1984.7015	53.7	0.398		1983.7106	15.9	1.548
	1984.9965	56.2	0.397		1985.8430	16.2	1.560
	1985.8402	54.0	0.404	ADS 1081	Fin 337 BC	8036	01198-0029
ADS 859	Bu 1161	6084	01029+5148		1982.7629	127.8	0.132
	1983.0690	2.3	0.359		1982.7657	127.6	0.121
	1983.7106	5.3	0.355		1983.7106	132.6	0.102
	1984.7015	5.2	0.352		1985.8430	246.6	0.115
	1985.8403	5.2	0.352	ADS 1087	HJ 2036	8071	01199-1548
ADS 862	STT 21	6114	01030+4723		1982.7629	345.0	2.077
	1985.8483	174.1	0.980	ADS 1105	STF 115 AB	8272	01233+5808
+62 0191	MLR 87	6129	01036+6341		1983.0690	125.1	0.113
	1983.0690	100.8	0.305		1983.7107	120.5	0.067
	1983.7104	101.0	0.306		1984.7045	326.2	0.032
	1984.0547	99.8	0.306		1985.8430	311.4	0.081
	1984.7015	100.4	0.306	ADS 1123	Bu 1163	8556	01243-0655
	1985.8402	95.1	0.308		1982.7629	213.0	0.353
ADS 871	Hu 517	-----	01037+5026		1982.7657	212.9	0.354
	1983.0690	25.5	0.542		1983.7106	213.3	0.334
	1983.7106	27.4	0.541		1984.9966	211.2	0.295
	1985.8403	27.0	0.547		1984.9994	211.2	0.297
-----	CHARA 2	5621	01037+8436		1985.8429	208.9	0.269
	1984.0547	90.3	0.139	ADS 1183	A 1910 AB	9071	01296+2250
ADS 873	Ho 213	6264	01039+3528		1983.7106	102.4	0.029
	1983.0690	94.5	0.286	+67 0131	CHARA 3	9015	01308+6722
	1983.7106	95.6	0.291		1983.0691	344.2	0.247
	1984.7017	96.3	0.290	HR 439	MCA 3	9352-3	01334+5820
	1984.9966	96.5	0.290		1984.7045	117.8	0.125
	1985.8457	96.9	0.290		1985.8430	113.6	0.119
ADS 916	A 931	6553	01070+4744	ADS 1226	A 816	9454	01357+7226
	1985.8456	90.4	0.079		1983.0663	307.4	0.791
ADS 918	A 1516 AB	6586	01071+3839		1983.7107	308.1	0.785
	1985.8456	62.7	0.145		1985.8430	307.6	0.798
ADS 936	AC 13 AB	6757	01088+4512	ADS 1263	A 817	9841	01371+4843
	1983.0690	263.0	0.584		1983.0662	30.6	0.456
	1983.7106	264.0	0.591		1983.7106	31.7	0.457
	1985.8484	263.1	0.595		1985.8430	30.5	0.464
ADS 940	STT 515	6811	01093+4715		1985.8485	30.2	0.462
	1983.0690	134.7	0.470	HR 466	Kui 7	10009	01376-0924
	1983.7159	135.7	0.465		1982.7657	49.7	0.070
	1984.0602	135.8	0.463		1985.8429	2.2	0.096
	1984.9966	134.6	0.467	UV Cet	GL 65	-----	01388-1758
	1985.8484	133.4	0.475		1982.7548	52.4	1.971
				ADS 1264	Hu 1030	9721	01389+7644
					1983.0663	319.2	0.736
					1983.7107	320.2	0.728
					1985.8430	319.7	0.739

TABLE IV. (continued)

ADS 1286	A 1266	10031	01392+5436	ADS 1630	STT 38 BC	12534	02035+4223
1983.0663	235.0	0.221			1982.7605	108.8	0.578
1983.7130	236.0	0.224			1983.7159	108.8	0.575
1984.7045	235.7	0.219			1985.8485	107.6	0.579
1985.8430	236.6	0.220		+69 0129	MLR 375	12300	02038+7013
					1983.0663	207.9	0.264
ADS 1309	A 1267	10146	01405+5457		1983.7107	210.8	0.255
1983.0663	0.0	0.258			1985.8430	209.0	0.240
1983.7107	2.1	0.261		+34 0379	Cou 1067	13102	02090+3541
1984.7045	2.3	0.261			1985.8486	14.0	0.101
1985.8430	1.8	0.265		ADS 1682	STF 216	13196	02114+6222
					1983.7107	13.4	0.212
ADS 1318	Kr 12	10196	01415+6240	HR 649	MCA 5	13611	02130+0851
1983.0663	294.3	0.431			1985.8375	42.2	0.047
1983.7107	294.6	0.433		HR 643	CHARA 5	13520	02132+4414
1985.8430	293.8	0.427			1983.7130	180.4	0.187
				ADS 1709	STF 228	13594	02141+4729
ADS 1345	A 1	10508	01424-0646		1983.0663	269.7	1.048
1983.7106	242.3	0.762			1984.7070	271.3	1.054
ADS 1359	Bu 870	10543	01443+5732		1985.8538	271.7	1.062
1985.8430	0.9	0.845		HR 640	MCA 6	13474	02145+6631
ADS 1438	CHARA 4 Aa	11031	01492+4754		1982.7657	28.3	0.073
1984.7070	14.0	0.141			1983.7107	33.6	0.078
+25 0311	Cou 452	11245	01510+2551		1985.8430	61.5	0.057
1983.7106	181.6	0.271		HR 657	Cou 79	13872	02157+2503
1984.7046	181.6	0.267			1982.7577	253.0	0.154
1985.8375	179.6	0.291			1982.7659	252.3	0.159
ADS 1461	A 951	11126	01512+6021		1983.0663	253.4	0.166
1983.0663	217.4	0.426			1983.7107	247.5	0.159
1983.7107	218.8	0.431		ADS 1729	A 2013	13959	02158+0638
1984.7045	218.9	0.431			1982.7577	127.1	0.294
1985.8431	218.5	0.438			1983.7131	123.4	0.323
ADS 1473	Ho 311	11284	01512+2439		1985.8538	117.7	0.390
1985.8538	290.3	0.065		+40 0476	Cou 1670	14137	02183+4120
ADS 1490	I 450	11435	01519-2309		1983.7131	49.6	0.149
1984.7070	219.4	0.506			1984.7045	48.6	0.144
ADS 1509	A 953	11472	01547+5955		1985.8486	51.7	0.148
1983.0663	67.6	0.777		ADS 1763	Egg 2 Aa	14189	02186+4017
1983.7107	68.7	0.787			1985.8486	106.0	0.112
1985.8431	67.7	0.793		+69 0144	MLR 377	14382	02231+7021
ADS 1522	STF 183 AB	11671	01551+2847		1983.0663	152.5	0.565
1983.0662	175.4	0.264			1983.7107	153.4	0.563
1983.7131	175.0	0.275			1984.9967	153.2	0.586
1984.7046	173.3	0.279			1985.8541	152.6	0.586
1985.8375	171.2	0.289		ADS 1913	A 660	-----	02314+4234
ADS 1538	STF 186	11803	01558+0151		1983.0663	309.6	0.470
1982.7629	56.8	1.259			1983.7131	310.5	0.458
1982.7657	56.8	1.255		ADS 1865	A 2329	15285	02277+0426
1983.7131	58.0	1.242			1982.7577	270.0	0.372
1984.7070	57.8	1.230			1983.0663	273.5	0.402
1984.9967	58.0	1.219			1983.7131	276.3	0.427
ADS 1548	A 819 AB	11849	01570+3101		1985.8375	288.0	0.475
1983.0662	194.3	0.352		HR 719	Kui 8	15328	02280+0158
1983.7131	198.6	0.352			1982.7577	33.9	0.494
1984.7045	200.3	0.346			1982.7659	33.6	0.496
1985.8375	202.1	0.331			1983.0663	33.7	0.483
ADS 1554	A 1526	11869	01576+4433		1983.7131	35.4	0.490
1983.0662	254.9	0.138			1984.0575	35.0	0.489
1983.7130	260.4	0.138			1984.9967	35.0	0.490
1984.7045	259.9	0.134			1985.8375	34.8	0.499
ADS 1598	Bu 513 AB	12111	02019+7054	ADS 1860	CHARA 6 Ap	15089	02290+6724
1983.7130	213.9	0.729			1982.7576	173.5	0.496
1984.9966	217.9	0.747			1985.8540	160.4	0.414
1985.8430	220.3	0.765		ADS 1938	STT 42 AB	15703	02333+5218
					1982.7604	282.2	0.149
ADS 1615	STF 202	12446-7	02020+0246		1982.7657	282.2	0.159
1982.7549	283.1	1.910			1983.0663	281.3	0.160
1983.7131	282.7	1.903			1983.7107	282.6	0.153
1984.7070	282.1	1.886			1984.7046	284.0	0.147
1984.9966	281.8	1.882			1985.8540	284.5	0.142
ADS 1613	A 1813 AB	12376	02022+3643				
1985.8486	4.9	0.159					
+08 0316	MCA 4	12483	02026+0905				
1982.7603	139.6	0.215					
1983.0662	138.2	0.204					
1983.7131	139.5	0.216					
1985.8538	140.5	0.223					

TABLE IV. (continued)

+79 0075	MLR 449	15416	02361+7944	ADS 2200	Bu 524 AB	17904	02537+3820
	1983.0663	192.9	0.255		1982.7605	295.0	0.183
	1983.7107	195.0	0.267		1982.7659	294.2	0.195
	1985.8541	195.5	0.266		1983.0636	293.1	0.198
HR 763	McA 7	16234	02366+1226		1983.7131	289.8	0.191
	1983.7107	143.6	0.084		1984.0521	288.4	0.189
	1983.7159	142.9	0.093		1985.8378	279.0	0.190
	1984.0575	131.3	0.058	HR 854	τ Per	17878	02543+5245
	1985.8376	130.6	0.063		1982.7657	92.7	0.053
ADS 1992	A 1278	16283	02383+4604		1985.8378	99.8	0.067
	1983.7133	160.5	0.112	+59 0567	MLR 520	17911	02552+5950
	1984.7046	158.1	0.117		1983.7133	354.2	0.121
	1985.8540	154.8	0.119	ADS 2246	Bu 1173 AB	18442	02586+2408
ADS 2005	A 450	16453	02384-0125		1983.0635	85.0	0.210
	1983.7131	198.7	0.354		1983.7131	86.3	0.219
	1985.8539	196.6	0.357		1984.0521	85.8	0.220
ADS 1985	STF 278	16096	02389+6918		1985.8403	86.7	0.226
	1983.0663	34.5	0.495	ADS 2253	Bu 525	18484	02589+2137
	1983.7107	37.5	0.504		1982.7549	258.7	0.493
	1984.7070	37.0	0.502		1982.7577	258.9	0.493
	1985.8541	37.3	0.500		1983.0635	259.3	0.488
HR 781	Fin 312	16620	02396-1153		1984.0521	259.7	0.492
	1982.7578	235.3	0.097		1984.7070	260.3	0.498
	1982.7659	239.1	0.086		1984.9967	260.3	0.497
	1983.0471	273.1	0.104		1985.8403	260.3	0.506
	1983.7131	59.4	0.100	ADS 2257	STF 333 AB	18519-0	02592+2120
	1984.0575	92.7	0.120		1982.7550	208.1	1.432
	1985.8539	140.0	0.071		1982.7577	208.1	1.433
ADS 2028	A 1928	16619	02398-0009		1983.0635	207.5	1.430
	1982.7577	238.6	0.199		1984.7070	209.1	1.415
	1983.0663	238.8	0.199		1984.9967	208.9	1.404
	1983.7131	245.1	0.205		1985.8350	208.6	1.416
	1985.8539	255.1	0.174	ADS 2271	A 1529	18549	03006+4753
ADS 2044	See 19	16753	02405-2408		1983.7133	165.9	0.177
	1984.7070	291.9	0.299		1984.0520	166.4	0.179
+38 0536	Cou 1371	-----	02409+3905		1985.8378	170.3	0.180
	1985.8540	305.2	0.067	ADS 2276	A 827	18424	03024+7236
+40 0568	Cou 1511	16656	02415+4053		1983.0636	252.4	0.221
	1982.7605	66.6	0.152		1983.7133	251.2	0.225
	1982.7659	67.0	0.141	HR 915	γ Per	18925	03048+5330
	1983.7131	58.9	0.133		1982.7578	64.8	0.237
	1984.7046	50.4	0.115		1982.7660	64.7	0.240
	1985.8540	31.2	0.103		1983.0471	65.6	0.243
HR 788	McA 8	16739	02422+4012		1983.7107	65.9	0.247
	1982.7659	166.7	0.049		1983.7133	65.8	0.246
	1983.7131	151.4	0.056		1984.0602	65.3	0.245
	1984.0576	94.6	0.038		1985.0049	65.3	0.247
	1984.0602	95.9	0.047		1985.8378	65.0	0.239
	1984.7046	143.8	0.051	ADS 2336	STF 346 AB	19134-5	03055+2515
	1985.8376	106.1	0.048		1982.7609	62.7	0.214
HR 793	μ Ari	16811	02424+2000		1983.0635	64.5	0.221
	1982.7659	105.3	0.052		1983.7131	64.6	0.228
+43 0576	CHARA 7	17245	02475+4416		1984.0521	64.1	0.230
	1984.0576	104.1	0.159		1985.8403	65.2	0.248
ADS 2159	McA 10 Aa	17573	02500+2716	+61 0520	MLR 35	18990	03062+6146
	1984.7046	1.8	0.122		1983.7133	339.2	0.215
+01 0502	Vou 36	17780	02513+0141		1985.8431	338.9	0.220
	1983.7131	9.1	0.386	ADS 2334	Bu 1175	19091-2	03062+4342
	1985.8375	9.3	0.386		1983.7131	274.6	0.606
ADS 2185	A 2906 AB	17743	02529+5300		1985.8378	274.1	0.613
	1983.0636	146.0	0.158	HR 952	CHARA 8	19789	03114+1303
	1983.7133	136.6	0.150		1982.7632	24.2	0.533
	1985.8540	136.0	0.164	+17 0515	Cou 359	-----	03143+1821
ADS 2185	STF 314 AB,C	17743	02529+5300		1983.7134	171.1	0.162
	1982.7576	309.8	1.563		1985.8403	171.1	0.164
	1983.0636	310.0	1.577	ADS 2440	Bu 84	20319	03161-0555
	1983.7133	310.0	1.543		1982.7634	10.6	0.940
	1984.0520	310.0	1.531		1985.8351	11.8	0.950
	1985.8540	309.9	1.552				

TABLE IV. (continued)

ADS 2436	STT 52 AB	20104	03175+6539	ADS 2799	STT 65	23985	03504+2536
1982.7578	72.4	0.456		1984.0521		209.6	0.492
1983.0636	73.6	0.435		1984.9998		210.2	0.474
1983.7133	72.9	0.456		1985.8351		210.4	0.448
1984.7070	72.2	0.455		HR 1199	Kui 15	24263	03519+0633
1984.9967	71.9	0.455		1982.7632		208.8	0.647
1985.8378	71.5	0.461		1982.7660		208.6	0.645
ADS 2463	See 23	20610	03184-2231	1983.0472		208.9	0.647
1982.7632	62.1	0.233		1984.0521		209.3	0.640
1983.0664	66.9	0.209		1984.7072		209.3	0.646
HR 1005	Cou 259	20756	03212+2109	1984.9967		209.2	0.646
1983.7134	234.4	0.732		1985.8351		208.4	0.656
GL 140	Wor 4	-----	03241+2348	ADS 2911	Hu 27	25034	03591+0948
1983.7134	349.2	1.999		1984.0521		296.6	0.295
1985.8431	347.9	2.046		1984.9996		302.5	0.305
+28 0532	CHARA 9	21242	03266+2843	1985.8433		300.0	0.302
1985.8431	63.0	0.432		ADS 2928	A 1937	25248	04008+0505
HR 1036	CHARA 10	21335	03271+1845	1985.8433		200.5	0.134
1985.8403	109.4	0.076		+19 0662	CHARA 13	25811	04063+1952
+19 0537	Cou 260	21437	03280+2028	1985.8406		66.1	0.074
1982.7632	22.5	0.217		ADS 3000	Hu 1363	26087	04069-2200
1983.0636	23.3	0.220		1983.0636		115.2	0.412
1983.7134	23.7	0.219		1984.7072		117.0	0.426
1984.0521	22.9	0.221		+33 0795	Cou 1082	25976	04081+3407
1985.8431	23.1	0.223		1984.0522		61.8	0.290
ADS 2538	A 980	21203	03283+6015	1985.8405		60.5	0.285
1983.0471	21.4	0.249		ADS 3007	A 998	25987	04089+4614
1983.7133	19.8	0.249		1983.0472		266.4	0.177
1985.8431	14.1	0.261		1983.0637		268.3	0.170
ADS 2563	STF 389 AB	21427	03301+5922	1984.0521		265.3	0.169
1982.7578	70.5	2.663		1985.8405		261.0	0.165
ADS 2616	STF 412 AB	22091	03345+2428	ADS 3032	A 469	26294	04094-0756
1982.7609	4.1	0.586		1983.0636		105.2	0.146
1983.0636	2.4	0.581		1985.8406		109.8	0.166
1983.7134	4.5	0.580		+42 0904	Cou 1702	26139	04100+4235
1984.0521	3.7	0.581		1985.8405		123.5	0.167
1984.7072	3.7	0.586		1985.8488		124.6	0.175
1984.9967	3.6	0.586		ADS 2963	STF 460	25007-8	04101+8042
1985.8351	2.7	0.589		1982.7632		114.1	0.785
ADS 2628	Bu 533	22195	03356+3141	1983.0472		114.4	0.777
1982.7609	43.5	1.082		1984.0521		114.9	0.762
1983.7134	44.4	1.070		1984.7072		116.5	0.770
1984.7072	44.4	1.068		1985.8351		116.7	0.775
1984.9967	44.1	1.061		+31 0718	Cou 880	26385	04117+3133
1985.8433	43.6	1.078		1984.7072		45.5	0.694
ADS 2630	A 1535	22193	03361+4221	1984.9968		45.1	0.687
1983.7134	315.0	0.583		1985.8406		44.3	0.700
1984.0521	315.1	0.586		+23 0635	CHARA 14	284163	04119+2338
1984.7072	316.3	0.594		1985.8406		86.3	0.138
1984.9967	316.3	0.594		Ross 29	CHARA 15	-----	04120+5016
1985.8433	317.0	0.609		1982.7579		77.2	0.989
ADS 2668	STF 425	22692	03400+3408	1983.0637		153.1	1.219
1982.7605	73.5	1.942		ADS 3053	STT 74	26547	04123+0939
1985.8541	72.3	1.962		1984.0522		276.2	0.274
+31 0637	Cou 691	-----	03423+3141	1984.0603		277.0	0.274
1983.7134	91.3	0.138		1984.7072		275.4	0.262
1984.0521	91.0	0.120		1984.9968		275.8	0.256
1985.8405	91.7	0.110		1985.8488		275.8	0.246
+23 0496	CHARA 11	23157	03437+2339	ADS 3064	A 1938	26690	04136+0743
1983.7134	173.1	0.232		1982.7551		356.8	0.073
+23 0512	Cou 560	23387	03456+2420	1982.7661		356.5	0.066
1982.7609	0.8	0.242		1984.0522		143.1	0.097
1983.7134	1.3	0.238		1984.0603		142.6	0.094
1984.0521	0.5	0.241					
1984.9996	1.6	0.243					
1985.8405	0.4	0.238					
+23 0523	CHARA 12	23489	03465+2415				
1983.7134	51.6	0.230					
ADS 2765	STT 62	23406	03488+6445				
1983.7133	310.7	0.311					
1984.0521	310.9	0.329					
1985.8405	314.0	0.328					

TABLE IV. (continued)

HR 1331	McA 14 Aa	27176	04185+2135	HR 1391	Fin 342 Aa	27991	04256+1557
1982.7550	191.98	0.134		1982.7661	209.98	0.052	
1982.7579	192.6	0.136		1983.0474	191.5	0.092	
1982.7605	190.4	0.132		1983.7108	169.7	0.093	
1982.7633	192.9	0.138		1983.7135	170.8	0.074	
1982.7661	193.4	0.131		1984.0522	159.1	0.086	
1983.0472	186.2	0.133		1984.0577	159.6	0.088	
1983.0637	187.2	0.150		1984.0604	157.4	0.081	
1983.7108	182.1	0.146		1985.8379	111.4	0.093	
1983.7135	179.6	0.148		1985.8406	112.2	0.096	
1984.0522	175.0	0.145		ADS 3230	Bu 311	28312	04269-2405
1984.0576	174.8	0.145		1983.0500	119.2	0.467	
1984.0603	172.7	0.135		1983.7162	118.7	0.457	
1984.9998	160.5	0.138		1984.0577	120.6	0.467	
1985.8378	145.7	0.114		1984.7072	120.2	0.465	
1985.8406	144.5	0.120		1985.8351	121.3	0.468	
1985.8541	145.7	0.120		ADS 3228	Bu 1186	28217	04275+1113
ADS 3105	STT 75	26882	04186+6029	1983.0500	131.7	0.221	
1983.0472	178.2	0.413		1983.7162	131.4	0.207	
1984.0521	179.7	0.403		1984.0522	130.5	0.205	
1985.8405	178.7	0.405		1984.7072	129.5	0.201	
ADS 3135	STT 79	27383	04187+1632	1984.9968	128.9	0.199	
1982.7551	109.2	0.229		1985.8488	126.6	0.194	
1982.7606	109.0	0.221		ADS 3247	Bu 184	28396	04279-2130
1982.7661	110.1	0.227		1983.0500	251.8	1.720	
1983.0472	111.2	0.222		HR 1411	McA 15	28307	04286+1557
1983.7162	123.3	0.186		1983.7135	356.6	0.148	
1984.0522	130.4	0.173		1984.0522	355.4	0.164	
1984.0576	132.2	0.173		1984.0577	354.6	0.165	
1985.8378	178.6	0.147		1985.8379	353.7	0.216	
1985.8406	177.5	0.149		1985.8406	353.1	0.217	
1985.8488	177.9	0.148		ADS 3248	Hu 1080	28363	04290+1610
ADS 3159	Bu 744 AB	27710	04215-2544	1982.7551	260.7	0.402	
1983.0500	140.6	0.589		1982.7606	260.8	0.400	
1983.7162	142.2	0.570		1982.7661	260.7	0.404	
1984.7072	143.9	0.567		1983.0500	260.8	0.406	
1984.9968	143.5	0.539		1984.0522	260.7	0.424	
ADS 3169	STT 82 AB	27691	04228+1504	1984.0577	261.0	0.421	
1984.7072	355.2	1.303		1985.8406	259.8	0.451	
1984.9968	355.0	1.296		+17 0735	Cou 567	28436	04298+1741
HR 1375	CHARA 16	27742	04235+2059	1983.7162	23.3	0.152	
1985.8514	9.4	0.182		1984.0522	22.5	0.149	
ADS 3172	STT 80	27650	04236+4226	-24 2401	RST 2347	28845	04318-2406
1982.7579	158.6	0.356		1983.0500	327.6	0.194	
1983.0472	158.2	0.361		ADS 3283	A 1839	-----	04324+3850
1984.0522	157.9	0.349		1983.7163	271.6	0.604	
1985.8406	156.6	0.348		+14 0721	CHARA 17	285931	04340+1510
ADS 3182	Hu 304	27820	04239+0928	1985.8514	38.6	0.147	
1982.7551	67.3	0.207		ADS 3317	CHARA 18 Aa	29140	04357+1010
1982.7633	67.7	0.207		1985.8488	16.4	0.104	
1983.0500	67.9	0.203		ADS 3326	A 1840 AB	-----	04361+0813
1983.7162	70.9	0.193		1983.0500	112.1	0.178	
1984.0522	71.7	0.187		1985.8459	103.0	0.166	
1984.0604	72.3	0.187		ADS 3329	STT 86	29193	04366+1945
1985.8488	78.1	0.162		1983.0503	16.8	0.460	
ADS 3191	Bu 1235	27832	04245+2245	1983.7162	17.0	0.451	
1983.0474	59.8	0.330		1984.0548	16.2	0.451	
1983.7162	60.5	0.334		1984.7072	16.0	0.451	
1984.0522	60.8	0.333		1985.8434	14.8	0.452	
1985.8379	62.3	0.313		HR 1481	Kui 18	29503	04382-1418
1985.8514	60.3	0.327		1982.7634	138.0	0.349	
ADS 3210	Bu 1185	27989	04256+1852	1983.0500	141.1	0.359	
1982.7579	7.5	0.109		ADS 3371	Bu 1044	29562	04398+1632
1982.7606	8.3	0.113		1983.0503	211.1	0.667	
1982.7661	6.4	0.104		1985.8434	212.4	0.649	
1983.0499	5.5	0.114		ADS 3358	Bu 1295 AB	29316	04399+5329
1985.8406	229.8	0.068		1983.7163	134.2	0.182	
				1984.0522	133.2	0.175	
				1984.7072	129.4	0.162	
				1984.9968	127.3	0.155	
				1985.8434	120.6	0.136	
				ADS 3358	STF 566 AC	29316	04399+5329
				1984.9968	221.3	0.728	
				1985.8434	220.7	0.727	

TABLE IV. (continued)

ADS 3387	A 2353	29727	04416+1643	ADS 3659	A 1023	32416	05054+4655
	1983.0503	154.99	0.169		1983.0637	60.90	0.353
	1983.7162	160.0	0.164		1984.0524	62.5	0.331
	1985.8434	162.4	0.165		1985.8516	61.9	0.331
HR 1497	McA 16	29763	04422+2257	ADS 3672	STT 95	32642	05055+1948
	1982.7551	4.8	0.185		1982.7634	303.3	0.923
	1982.7633	4.1	0.186		1983.0503	303.4	0.918
	1982.7661	5.4	0.186		1984.0549	302.7	0.913
	1983.0474	2.1	0.187		1984.7073	303.0	0.915
	1983.7163	357.7	0.184		1984.9969	302.8	0.910
	1984.0524	354.6	0.187		1985.8351	301.6	0.900
	1985.8380	340.1	0.193	+22 0818	STT 97	32641	05056+2304
-21 0953	Don 75	29961-2	04425-2059		1982.7634	152.0	0.354
	1983.0500	77.1	0.168		1983.0503	152.5	0.348
ADS 3391	A 1013	29606	04432+5932		1984.0524	152.1	0.347
	1985.8434	58.9	0.107		1985.8516	151.1	0.353
+39 1054	Cou 1524	29911	04445+3953	+22 0829	Cou 155	32864	05072+2224
	1982.7579	196.1	0.178		1985.8516	325.0	0.244
	1982.7660	196.1	0.176	ADS 3711	STT 98	33054	05074+0830
	1983.0664	195.1	0.190		1982.7607	12.8	0.639
	1985.8434	197.8	0.184		1983.0638	11.2	0.631
+42 1045	Cou 2031	30090	04465+4220		1984.7073	6.2	0.636
	1985.8434	311.0	0.054		1984.9969	5.7	0.624
ADS 3445	A 2	-----	04466-0437		1985.8516	2.5	0.632
	1985.8435	178.7	1.524	+37 1053	Cou 1531	32949	05085+3755
HR 1528	CHARA 19	30453	04493+3235		1982.7607	89.9	0.329
	1984.0576	147.8	0.041		1983.0503	87.5	0.331
ADS 3465	A 2621	30636	04496+0213		1985.8516	84.8	0.320
	1983.0502	75.4	0.150	ADS 3728	A 2636	33236	05089+0313
	1985.8459	80.4	0.150		1982.7634	154.5	0.260
+14 0770	CHARA 20	30712	04506+1505		1985.8516	156.2	0.266
	1985.8459	109.6	0.072	ADS 3748	A 484	33507	05103-0735
ADS 3475	Bu 883 AB	30810	04512+1104		1985.8514	150.5	0.096
	1982.7551	69.6	0.243	ADS 3734	STF 644	33203	05104+3718
	1982.7633	70.0	0.242		1982.7606	222.5	1.602
	1983.0502	73.4	0.235		1983.0503	222.4	1.599
	1984.0549	85.5	0.219		1985.8516	222.6	1.597
ADS 3483	Bu 552 AB	30869	04518+1339	ADS 3755	Bu 885	33546	05109-0146
	1982.7606	118.6	0.261		1983.0638	195.4	0.584
	1983.0503	119.9	0.264		1984.7073	197.1	0.594
	1984.0549	133.3	0.298		1984.9969	197.1	0.587
	1985.8434	146.6	0.346		1985.8516	197.0	0.598
-03 0928	RST 5501	31297	04545-0313	ADS 3767	Hu 33	33647	05117+0031
	1982.7634	45.9	0.285		1982.7634	10.4	0.100
	1982.7661	45.7	0.289		1985.8516	7.2	0.108
	1983.0502	45.5	0.287	ADS 3764	STF 652	33646	05118+0102
	1984.0549	45.0	0.280		1985.8542	181.0	1.607
	1985.8489	42.0	0.272	ADS 3799	STT 517 AB	33883-4	05134+0158
ADS 3558	A 2624	31622	04573+0100		1982.7634	235.1	0.512
	1985.8435	304.6	0.319		1983.0638	235.9	0.501
ADS 3588	Bu 314 AB	31925	04592-1622		1984.7073	236.4	0.522
	1982.7634	160.5	0.249		1984.9969	236.3	0.523
	1983.0500	160.3	0.277		1985.8516	236.0	0.537
	1984.0604	156.3	0.321	HR 1708	α Aur Aa	34029	05167+4601
ADS 3573	A 1303	31578	04599+5328		1983.0474	192.2	0.047
	1984.0524	314.3	0.206		1984.0524	11.3	0.047
	1985.8434	311.6	0.204		1984.0604	0.6	0.043
	1985.8489	311.4	0.199		1985.8542	57.3	0.053
+69 0288	MLR 399 AB	31264	05001+6958	+39 1272	Cou 2037	34807	05219+3934
	1985.8433	168.6	0.259		1982.7607	140.3	0.348
ADS 3608	A 1844	32092	05017+2640		1983.0503	140.6	0.346
	1985.8434	9.7	0.323		1985.8516	140.1	0.352
ADS 3662	A 481	32622	05043-0602	ADS 3991	WNC 2 A,BC	35317	05239-0053
	1983.0500	302.5	0.447		1983.0692	159.3	2.750
	1985.8514	300.9	0.454	+32 0966	Cou 1090	35132	05240+3238
+21 0754	Cou 154 AB	32481	05044+2139		1983.0504	230.8	0.235
	1983.0503	308.2	0.253		1985.8516	229.8	0.234
	1985.8516	306.5	0.254	ADS 4002	Da 5 Aa,B	35411	05244-0224
HR 1589	STT 89	31590	05046+7404		1984.9969	78.4	1.638
	1982.7633	297.9	0.467		1985.8542	77.6	1.660
	1982.7660	297.9	0.465	ADS 3997	A 2703	35365	05246+0910
	1984.0524	298.1	0.451		1985.8516	104.6	0.223
	1984.9969	298.5	0.454				
	1985.8407	298.0	0.458				

TABLE IV. (continued)

ADS 4020	A 848	35548	05255-0033	ADS 4323	STT 115 AB	38182	05445+1503
	1982.7634	158.2	0.207		1984.7073	119.1	0.470
	1985.8516	161.1	0.214		1984.9969	119.1	0.466
ADS 4078	Da 6	36058	05290-0318		1985.8542	118.1	0.466
	1985.8516	200.9	0.136	ADS 4324	A 496	38161	05449+2620
ADS 4072	Hu 217	35921	05297+3523		1983.0475	7.4	0.275
	1983.0503	253.1	0.608		1983.0665	4.7	0.276
	1985.8516	253.6	0.602		1985.8407	7.0	0.271
-01 0918	RST 4781	36219	05301-0145	+28 0871	Cou 762	38153	05450+2812
	1983.0638	197.9	0.376		1983.0665	66.4	0.166
	1985.8516	199.6	0.396		1985.8407	62.2	0.176
ADS 4115	STF 728	36267	05307+0556	HR 2001	McA 22	38735	05474-1032
	1984.7073	49.4	0.985		1983.0665	102.3	0.162
	1985.8516	49.4	1.005		1984.0605	111.2	0.161
ADS 4123	STF 729 AB	36351	05312+0317		1985.8544	108.6	0.175
	1984.7073	28.4	1.802	ADS 4390	STF 795	38710	05480+0627
	1984.9969	28.6	1.809		1983.0665	215.2	1.170
	1985.8542	28.0	1.835		1984.9969	216.7	1.151
ADS 4134	Hei 42 Aa	36486	05320-0018		1985.8352	216.4	1.161
	1982.7552	141.3	0.224	ADS 4396	A 2657	38769	05482+0137
	1982.7634	141.5	0.224		1983.0665	157.9	0.179
	1983.0638	141.6	0.226		1985.8542	167.9	0.177
	1984.0605	140.2	0.230	ADS 4392	STT 118 AB	38670	05484+2052
	1985.8542	139.3	0.242		1982.7607	316.7	0.250
ADS 4076	A 1034	35598	05325+7049		1983.0665	313.9	0.237
	1983.0503	144.4	0.711		1985.8542	316.4	0.214
	1985.8517	143.0	0.735	ADS 4376	STF 3115	38284	05491+6248
HR 1891	Fin 345	37016	05353-0425		1982.7634	352.0	0.859
	1983.0665	89.9	0.343		1983.0665	351.6	0.872
ADS 4208	STF 749 AB	37098	05372+2656		1984.0552	351.6	0.836
	1982.7607	326.5	1.089		1984.7074	351.4	0.836
	1983.0692	326.2	1.100		1984.9971	351.2	0.836
	1984.7073	326.3	1.076		1985.8517	350.3	0.844
	1984.9969	326.0	1.075	+29 1028	Cou 898	39303	05529+2907
	1985.8352	325.3	1.091		1985.8407	156.6	0.152
+43 1315	CHARA 21	36948	05373+4404	+28 0933	Cou 900	39451	05539+2857
	1985.8407	60.8	0.125		1985.8407	83.1	0.169
ADS 4203	A 1562	36928	05373+4339	ADS 4532	Hu 1235	39924	05573+3601
	1983.0665	348.6	0.403		1983.0665	102.0	0.186
	1985.8407	350.2	0.389	+24 1043	Cou 905	40132	05580+2437
+43 1315	-----	36947-8	05373+4404		1985.8517	15.8	0.186
	1982.7607	62.9	0.145	ADS 4562	STT 124	40369	05589+1249
ADS 4229	Bu 1240 AB	37269	05386+3030		1982.7607	297.5	0.482
	1982.7607	60.1	0.082		1983.0665	298.0	0.496
	1983.0475	49.8	0.094		1985.8542	297.4	0.499
	1985.8407	31.5	0.102	ADS 4617	A 2715 AB	40932	06024+0939
ADS 4241	Bu 1032 AB	37468	05387-0235		1984.0632	283.0	0.167
	1982.7552	152.3	0.245		1985.8544	212.6	0.086
	1982.7634	152.7	0.246	HR 2134	Kui 23 AB	41116	06041+2316
	1983.0692	150.6	0.235		1982.7635	20.9	0.101
	1984.0605	149.2	0.242		1983.0475	35.1	0.093
	1985.8544	144.6	0.246		1984.0605	113.2	0.093
ADS 4236	A 1564	37265	05394+4343		1984.0632	108.0	0.098
	1985.8407	135.9	0.143		1985.8380	157.4	0.204
ADS 4243	STT 112	37384	05398+3758	ADS 4660	A 1951	41379	06052+0708
	1983.0665	52.2	0.831		1983.0667	43.2	0.433
	1985.8407	53.2	0.845		1985.8435	44.5	0.441
ADS 4249	Hu 825	37405	05400+3601	ADS 4603	STT 121	40225	06053+7400
	1983.0665	343.9	0.389		1984.0552	243.5	0.252
ADS 4265	Bu 1007	37711	05411+1632	+18 1095	Cou 471	41658	06073+1848
	1982.7607	239.0	0.333		1983.0693	168.8	0.282
	1983.0665	239.3	0.345		1985.8435	166.3	0.300
	1985.8352	240.1	0.331	+26 1082	McA 25	41600	06074+2640
ADS 4279	Bu 1052	37904	05417-0254		1985.8380	220.3	0.063
	1983.0692	20.6	0.331	ADS 4696	STT 130	41541	06078+4240
	1985.8544	18.7	0.383		1983.0667	199.7	0.386
ADS 4299	A 494 AB	38089	05428-0649		1984.0551	202.0	0.392
	1983.0692	104.8	0.181		1985.8380	200.6	0.401
	1985.8352	124.2	0.133		1985.8435	201.2	0.399
ADS 4304	A 117	38068	05436+1259	ADS 4750	A 54 AB	42033	06098+2914
	1983.0665	249.9	0.786		1983.0667	335.2	0.527
	1984.7073	251.8	0.782		1985.8353	335.2	0.541
	1985.8542	250.7	0.791		1985.8380	336.2	0.532
					1985.8435	335.2	0.538

TABLE IV. (continued)

HR 2186	RST 3442	42443	06098-2246	HR 2425	McA 27	47152	06383+2859
	1983.0475	299.9	0.175		1982.7552	356.0	0.085
	1983.0667	301.1	0.168		1982.7635	356.8	0.086
ADS 4768	Bu 1058	42216	06105+2300		1983.0475	352.5	0.092
	1982.7635	238.1	0.237		1984.0552	342.0	0.107
	1983.0667	242.9	0.220		1984.0605	340.2	0.099
	1985.8407	237.1	0.229		1984.0634	344.8	0.101
HR 2214	Kui 24	42954	06144+1754		1985.8381	327.7	0.132
	1983.0693	138.5	0.492	ADS 5289	STT 152	47395	06395+2816
	1984.0579	139.2	0.479		1984.0552	36.8	0.863
	1984.9971	139.4	0.483		1984.9971	36.8	0.857
ADS 4866	A 668	43362	06154-0902		1985.8408	36.0	0.861
	1985.8544	42.1	0.079	ADS 5332	A 218	47812	06418+3041
HR 2236	RST 5225	43358	06159+0110		1985.8381	69.9	0.181
	1983.0667	220.4	0.203	+70 0410	MLR 405	46979	06425+7035
	1984.0579	224.4	0.215		1984.0552	245.5	0.540
	1985.8544	238.1	0.200		1985.8407	245.2	0.549
ADS 4890	Fin 331 Aa	43525	06171+0957	ADS 5407	A 2825	48688	06450+1045
	1982.7552	326.5	0.071		1984.9998	3.8	0.190
	1983.0475	347.5	0.066		1985.8381	5.7	0.197
	1984.0605	254.8	0.044	ADS 5429	Ho 238	48884	06463+1812
	1985.8544	322.9	0.069		1985.8353	172.4	0.361
HR 2273	CHARA 22	44112	06197-0749	ADS 5400	STF 948 AB	48250	06463+5927
	1985.8544	55.5	0.055		1983.0668	80.3	1.794
ADS 4929	Bu 895 AB	43885	06200+2826		1985.8435	79.3	1.803
	1982.7635	124.8	0.223	+16 1273	CHARA 24	48954	06468+1646
	1984.0552	126.6	0.232		1983.0695	37.1	0.489
	1985.8407	128.5	0.242	ADS 5447	STT 156	49059	06474+1812
ADS 4951	A 2719	44109	06203+0744		1983.0667	239.8	0.406
	1983.0667	61.1	0.445		1984.0605	238.9	0.400
	1984.0579	62.4	0.450		1985.8353	236.3	0.401
	1985.8352	63.2	0.462	HR 2521	Fin 322	49643	06492-0217
ADS 4971	A 2667	44333	06214+0216		1983.0475	61.5	0.157
	1984.0579	172.5	0.288		1983.0667	57.0	0.155
	1985.8544	178.4	0.278		1984.0579	59.5	0.154
ADS 4950	STF 881 AB	43812	06221+5923		1984.9998	58.3	0.155
	1983.0665	130.3	0.682		1985.8381	55.3	0.159
	1984.0552	132.0	0.680	+36 1511	Cou 1738	49472	06502+3625
	1984.7074	132.9	0.682		1984.0525	101.0	0.110
	1984.9971	132.3	0.673		1984.9999	104.8	0.105
	1985.8407	132.5	0.691		1985.8409	106.2	0.111
ADS 5023	Bu 568	44953	06238-1947	+24 1417	Cou 768	49622	06503+2410
	1983.0693	154.3	0.808		1984.9999	259.7	0.078
HR 2312	Fin 343	45050	06252+0130		1985.8409	256.9	0.096
	1983.0475	8.8	0.170	ADS 5514	STF 963 AB	49618-9	06532+5928
	1984.0579	5.7	0.159		1982.7634	259.3	0.270
	1985.8381	0.6	0.169		1983.0476	259.0	0.273
+23 1346	CHARA 23	44926	06255+2327		1983.0668	259.7	0.265
	1985.8408	150.9	0.104		1984.0525	261.5	0.267
HR 2304	McA 26	44927	06256+2320		1984.9999	263.6	0.263
	1985.8381	141.1	0.054		1985.8545	264.9	0.262
+24 1276	Cou 914	45428	06283+2441	HR 2541	Cou 1877	50037	06532+3827
	1983.0667	115.2	0.212		1983.0475	149.0	0.502
ADS 5103	BTZ Aa	45542	06289+2014		1984.0525	151.0	0.486
	1982.7552	135.9	0.080		1984.9972	152.3	0.480
	1984.0579	140.3	0.049		1985.8409	153.0	0.484
	1984.0634	144.8	0.055	ADS 5557	STF 987	50700	06541-0552
Ross 614	GL 234	-----	06294-0249		1984.9972	174.7	1.293
	1982.7581	215.6	0.486		1985.8435	174.3	1.314
+52 1088	Wor 6	-----	06323+5225	ADS 5571	A 2833	50722	06549+1158
	1983.0668	276.6	0.447		1985.8408	262.9	0.058
ADS 5218	A 506	46610	06357+2816	ADS 5586	STT 159 AB	50522	06573+5825
	1983.0667	32.3	0.250		1983.0668	46.6	0.494
	1984.0552	34.1	0.249		1984.0525	47.3	0.466
	1985.8381	34.2	0.241		1984.9972	48.5	0.427
ADS 5224	A 1051	46655	06367+4415		1985.8545	49.3	0.394
	1984.0552	224.9	0.691	ADS 5625	A 2681	51449	06575+0253
	1984.7074	225.4	0.689		1985.8381	140.9	0.298
	1985.8408	224.5	0.687	+02 1483	CHARA 25	51566	06580+0218
	1985.8435	224.4	0.692		1985.8408	40.7	0.910
				+65 0550	MLR 133	50452	06582+6516
					1985.8545	20.5	0.112

TABLE IV. (continued)

HR 2605	MCA 28	51688	06595+2555	ADS 6185	STT 175 AB	60318	07352+3058
	1982.7635	33.95	0.082		1983.0476	328.99	0.182
	1984.0525	43.1	0.073		1984.0526	329.3	0.190
	1984.0605	40.8	0.072		1985.8491	328.2	0.206
	1984.9999	44.5	0.059	-25 4775	B 729	61071	07365-2520
	1985.8544	48.5	0.064		1983.0504	171.8	0.116
ADS 5660	A 2461 AB	51911	06598+1557	ADS 6244	Ho 245 AB	61343	07387-0127
	1983.0476	328.0	0.311		1983.0504	184.8	0.602
	1985.8408	326.3	0.316		1984.9972	185.6	0.602
ADS 5671	Bu 1022 AB	267648	07007+2716		1985.8436	185.1	0.601
	1985.8409	68.3	0.321	ADS 6245	A 535	61344	07387-0459
ADS 5689	STT 163 AB	52309	07011+1146		1983.0504	172.1	0.357
	1984.0580	57.6	0.113	ADS 6263	STF 1126 AB	61563	07401+0515
	1984.9998	56.0	0.113		1983.0504	165.0	0.941
	1985.8408	63.1	0.120		1985.8353	165.6	0.926
ADS 5707	A 3042 AB	52590	07015-0942	ADS 6313	A 2534 AB,C	62264	07431+0012
	1985.8381	204.4	0.324		1985.8353	231.1	0.817
ADS 5712	Bu 573	52694	07018-1053	ADS 6347	Ho 247	62720	07462+2108
	1985.8544	294.5	0.854		1984.0525	231.8	0.386
+37 1645	MCA 29	52823	07043+3734		1985.8409	233.3	0.397
	1983.0476	176.2	0.169	-03 2065	RST 4375	63263	07478-0332
	1984.0581	179.4	0.165		1983.0504	344.3	0.121
	1985.8409	178.9	0.171	ADS 6354	Hu 1247	62522	07479+6019
ADS 5814	A 3043	54336	07079-1542		1983.0476	291.8	0.226
	1983.0476	292.6	0.200		1984.0526	283.1	0.235
ADS 5857	A 2122	55118	07113-1033	-19 2068	B 1077 AB	63395	07480-1924
	1985.8544	83.3	0.137		1983.0504	298.7	0.535
+20 1729	Cou 925	54985	07118+1953	ADS 6378	WRH 15 AB	63208	07486+2309
	1985.8408	80.2	0.496		1984.0525	50.8	0.268
ADS 5866	AG	-----	07123+1839		1984.0607	50.3	0.268
	1985.8436	194.4	0.636		1985.8409	49.3	0.272
ADS 5871	STF 1037 AB	55130	07128+2714	ADS 6405	A 2880	63799	07508+0317
	1983.0668	318.4	1.262		1983.0504	280.2	0.122
	1983.0695	318.7	1.243		1985.0000	292.7	0.102
	1984.0581	319.3	1.207	ADS 6412	Bu 1195	63976	07513-0925
	1984.9972	318.5	1.213		1983.0504	90.6	0.198
	1985.8436	317.5	1.225	ADS 6420	Bu 101	64096	07518-1352
ADS 5918	Bu 1023	55726	07151+2553		1983.0504	84.8	0.265
	1984.0525	302.7	0.438	HR 3072	Fin 325	64235	07528-0526
	1985.8409	302.1	0.443		1983.0504	180.6	0.354
ADS 5956	A 2123 AB	56593	07171-1201		1985.0000	184.4	0.296
	1985.8545	149.9	0.291		1985.8353	186.8	0.264
+24 1600	Cou 585	56462	07181+2405	+24 1805	Cou 929	64704	07561+2342
	1985.8436	154.3	0.378		1983.0476	113.7	0.126
ADS 5975	Hu 619 AB	56627	07202+4820		1985.8409	142.8	0.135
	1985.8491	1.8	0.366	ADS 6483	STT 185	65123	07573+0108
ADS 5996	STF 1074 AB	57275	07205+0024		1983.0504	65.1	0.179
	1984.0525	168.1	0.634		1985.0000	74.7	0.162
	1984.9972	168.3	0.636	HR 3109	MCA 33	65339	08017+6019
	1985.8436	168.1	0.642		1983.0476	282.8	0.114
-20 1935	DON 181	58763	07262-2024		1984.0526	298.8	0.091
	1983.0504	132.2	0.501	ADS 6538	STT 186	66176	08033+2616
+69 0422	MLR 409	57308	07264+6929		1984.9972	74.9	0.951
	1985.8545	345.2	0.379		1985.8436	74.4	0.965
+20 1805	CHARA 26	58579	07269+2015	ADS 6554	Bu 581 AB	66509	08043+1218
	1984.0607	127.1	0.030		1983.0476	266.6	0.544
	1985.0000	163.4	0.049		1985.8436	274.3	0.556
ADS 6089	MCA 30 Aa	58728	07277+2127	ADS 6578	A 1333	66610	08070+5407
	1983.0476	166.1	0.110		1983.0476	208.4	0.360
	1985.0000	166.8	0.099		1984.0526	208.8	0.350
ADS 6126	STF 1104 AB	59438	07294-1459		1985.8436	208.1	0.361
	1983.0504	14.6	1.945	ADS 6623	STF 1187	67501	08095+3213
ADS 6138	A 2869	59473	07305+0743		1985.8436	26.2	2.762
	1983.0504	26.6	0.153	ADS 6650	STF 1196 AB	68255-7	08122+1740
	1984.0525	25.0	0.135		1983.0476	254.1	0.673
	1985.8545	16.9	0.129		1984.0526	245.4	0.642
+08 1791	CHARA 27	59604	07309+0833		1984.9973	236.0	0.618
	1983.0504	59.7	0.261		1985.0028	236.3	0.619
HR 2886	MCA 32	60107	07336+1550		1985.8353	226.3	0.601
	1983.0505	89.8	0.195	+29 1712	Cou 1114	68254	08126+2849
	1984.0525	90.3	0.189		1983.0476	227.0	0.219
	1984.0607	90.9	0.186		1984.0526	229.1	0.221
	1985.0001	91.1	0.183		1985.8409	226.9	0.207
	1985.8491	89.5	0.183				

TABLE IV. (continued)

HR 3269	Fin 346	70013	08199+0357	ADS 7158	A 1585	77327	09036+4709
	1983.0476	729.4	0.266		1983.0642	280.1	0.259
	1984.0526	72.4	0.266		1984.0554	280.4	0.257
	1985.8436	70.8	0.269		1984.0609	280.8	0.257
ADS 6762	STF 1216	70340	08214-0136		1985.0001	279.5	0.248
	1985.8436	280.9	0.525		1985.8353	278.0	0.238
ADS 6796	Hu 856	70803	08253+3723	HR 3650	Fin 347 Aa	79096	09123+1459
	1984.0526	257.9	0.252		1984.0527	141.1	0.157
ADS 6811	A 1746 BC	71153	08267+2433		1984.0582	144.3	0.161
	1984.0526	154.5	0.148	ADS 7284	STF 3121	79969	09180+2835
-20 2538	B 2179	71581	08276-2051		1983.0643	203.5	0.473
	1983.0477	212.2	0.397		1984.0527	209.0	0.495
ADS 6828	A 551 AB	71663	08285-0230	+19 2194	Cou 384	80082	09183+1847
	1984.0553	74.4	0.182		1984.0527	53.4	0.116
ADS 6862	I 489	72310	08315-1934	+77 0361	Kui 39	-----	09184+7716
	1983.0476	5.5	0.205		1983.0642	186.5	0.764
	1984.0607	2.4	0.200	ADS 7286	STF 1333	80024	09185+3522
ADS 6914	Bu 208 AB	73752	08391-2240		1983.0642	48.5	1.824
	1983.0477	11.8	0.360		1984.0582	49.9	1.811
	1984.9973	21.0	0.548	ADS 7307	STF 1338 AB	80441	09210+3812
+20 2148	Cou 47	73574	08397+2005		1983.0642	259.0	1.024
	1983.0476	141.6	0.515		1984.0527	260.8	1.016
	1984.0553	142.8	0.508		1984.9974	262.4	1.016
	1985.8436	141.1	0.521	ADS 7341	A 2477	81163	09245+1808
+20 2159	CHARA 28	73666	08402+2001		1984.0527	332.7	0.376
	1983.0477	126.7	0.425	HR 3750	B 2530	81809	09278-0604
ADS 6924	A 1749	-----	08412+4352		1984.3859	314.1	0.120
	1985.8436	106.6	0.625	ADS 7390	STF 1356	81858	09285+0904
ADS 6930	Bu 585	73871	08412+2028		1984.0527	33.2	0.428
	1984.0526	88.2	0.492		1984.0609	33.0	0.429
	1984.9973	87.5	0.487		1984.3777	34.4	0.429
	1985.8436	87.1	0.488	+58 1192	MLR 549	81772	09299+5808
ADS 6993	SP AB	74874	08468+0625		1984.0526	120.3	0.223
	1984.0553	196.0	0.255	HR 3794	Fin 349	82543	09326+0151
	1984.0608	195.7	0.259		1984.0527	161.6	0.162
ADS 6999	Bu 586	75098	08473-1703		1984.3777	161.9	0.158
	1984.0553	105.6	0.177		1984.3859	162.3	0.160
+00 2392	RST 5306	75012	08476+0005	ADS 7456	STF 1372	83190	09371+1614
	1984.0553	36.6	0.167		1984.0527	76.8	0.151
ADS 7012	A 2552	75207	08486+0057		1984.9974	80.0	0.131
	1984.0553	144.6	0.149	ADS 7457	A 1765	83158	09379+4554
ADS 7039	A 2473	75470	08507+1800		1984.0527	185.9	0.124
	1983.0641	46.3	0.297	+54 1323	CHARA 29	233666	09423+5328
	1984.0553	47.3	0.305		1983.0642	54.7	0.354
+20 2232	Cou 773	75974	08539+1958	ADS 7487	MLR 323 Aa	83661	09432+6708
	1983.0641	41.8	0.206		1983.4196	43.9	0.277
	1984.0553	42.8	0.216		1984.0603	29.0	0.500
	1985.0001	43.3	0.218	HR 3871	Fin 326	84367	09442-2746
ADS 7074	A 2554	76050	08539+0149		1984.3777	192.4	0.070
	1984.0553	20.5	0.181	HR 3880	McA 34	84722	09474+1134
ADS 7071	STF 1291 AB	75959	08542+3034		1984.0527	229.5	0.070
	1984.0554	313.0	1.451		1984.3778	233.0	0.061
	1984.9974	313.0	1.448	+21 2108	Cou 284	84739	09477+2036
	1985.8436	312.2	1.471		1984.0527	64.0	0.153
ADS 7082	A 2131 AB	76095	08549+2613		1984.0555	63.9	0.154
	1983.0479	183.6	0.360		1984.3750	63.7	0.152
	1984.0553	188.1	0.361		1984.3832	63.4	0.150
	1985.0001	192.4	0.364	HR 3889	Kui 44	85040	09498+2111
ADS 7067	STF 1280 AB	75632	08557+7048		1983.0698	209.6	0.243
	1983.0642	126.6	1.189		1984.0527	210.9	0.231
	1985.8436	138.8	1.089		1984.3750	210.8	0.231
ADS 7084	A 2132	76117	08557+4141		1984.3832	210.8	0.230
	1984.0554	198.7	0.171		1985.8353	206.4	0.234
+36 1889	Cou 1897	76595	08585+3548	ADS 7541	Ho 369 AB	85177	09512+3629
	1984.0554	165.4	0.170		1983.4196	100.5	0.390
	1985.0001	169.0	0.165		1984.0529	101.0	0.392
HR 3579	Kui 37 AB	76943	09008+4148	ADS 7545	STT 208	85235	09521+5404
	1984.0554	348.2	0.587		1983.0699	124.7	0.200
	1984.9974	335.7	0.533		1983.4196	127.2	0.193
					1984.0529	132.6	0.191
					1984.3750	135.1	0.189
					1984.3833	135.4	0.188
					1985.0084	141.0	0.182

TABLE IV. (continued)

ADS 7555	AC 5 AB	85558	09525-0806	ADS 7929	STT 229	93457	10481+4107
1984.0554	80.1	0.510		1983.0671	279.7	0.776	
1984.3777	79.5	0.516		1983.4277	279.3	0.766	
ADS 7635	I 293	87556	10052-2812	1984.3860	278.9	0.769	
1984.0554	324.6	0.168		ADS 7936	STF 1476	93742	10493-0401
+34 2079	Cou 1569	87473	10059+3412	1983.4277	13.3	2.265	
1984.0527	80.7	0.146		+12 2266	CHARA 32	93993	10511+1135
HR 3973	CHARA 30	87682	10068+0537	1983.4277	9.9	0.429	
1984.3832	139.5	0.132		HR 4291	CHARA 33	95345	11006+0337
ADS 7651	Kui 48 AB	87822	10083+3137	1983.4196	33.8	0.235	
1983.0698	171.7	0.157		1984.3860	36.2	0.177	
1984.0527	175.4	0.122		+29 2110	Cou 960	95342	11008+2913
1984.3778	177.9	0.109		1984.3833	88.6	0.088	
ADS 7662	A 2145	88021-2	10093+2020	+30 2097	CHARA 34 Aa	95515	11018+2952
1983.0698	179.7	0.124		1983.4277	102.5	0.242	
1984.0527	177.8	0.112		ADS 8035	Bu 1077	95689	11037+6145
1984.0555	177.0	0.120		1985.0029	297.0	0.775	
1984.3750	176.9	0.108		HR 4314	Fin 47	96202	11053-2718
1984.3778	176.1	0.110		1983.4277	223.7	0.090	
1984.3832	175.1	0.108		1984.3805	197.3	0.058	
+75 0403	Kui 47	-----	10111+7508	1984.3833	200.7	0.064	
1984.3860	116.7	1.223		ADS 8064	Hu 886	-----	11088+7626
ADS 7674	Hu 874	88355	10117+1321	1984.3860	169.5	1.097	
1984.0527	288.4	0.138		LFT 771-2	GL 9351	-----	11114+4327
1984.3750	288.6	0.127		1983.0671	78.3	3.851	
1984.3778	289.6	0.125		ADS 8086	Bu 220	97411	11124-1830
1984.3832	289.2	0.124		1983.4169	332.4	0.310	
ADS 7675	Ho 44	88478	10121-0613	1984.0529	328.8	0.267	
1984.0554	206.9	0.515		1984.3805	328.6	0.280	
ADS 7704	STT 215	88987	10163+1744	1984.3833	328.5	0.282	
1983.0698	181.5	1.347		ADS 8092	A 1353	97455	11136+5525
1984.0555	182.9	1.315		1983.0671	227.4	0.400	
1984.3860	182.8	1.312		1983.4167	226.4	0.387	
1984.9974	182.8	1.313		1984.0529	227.8	0.417	
ADS 7769	A 2570	90361	10260+0256	1984.3833	227.4	0.421	
1984.0554	307.2	0.335		ADS 8094	STF 1517	97561	11137+2008
1984.3832	307.1	0.337		1983.4167	326.8	0.407	
+20 2486	Cou 292	90460	10269+1931	1984.0583	327.0	0.415	
1984.0527	271.3	0.098		1984.3724	325.9	0.430	
1984.3750	264.6	0.117		1984.3833	326.2	0.424	
1984.3832	264.7	0.115		ADS 8104	Hu 639	97773	11154+4728
ADS 7775	STT 217	90444	10270+1713	1983.0699	87.0	0.083	
1983.0645	142.0	0.458		1984.0529	88.2	0.083	
1984.0527	143.1	0.474		1984.0610	86.7	0.079	
1984.0610	143.1	0.470		1984.3833	85.6	0.088	
1984.3750	143.6	0.470		+43 2096	Cou 1904	97857	11158+4227
1984.3778	141.3	0.473		1983.0671	195.1	0.282	
ADS 7780	Hu 879	90537	10279+3643	1984.3833	188.9	0.293	
1983.0645	231.1	0.463		ADS 8119	STF 1523 AB	98230-1	11182+3133
1983.0698	230.5	0.462		1983.0673	96.7	2.655	
1983.4196	231.4	0.450		1983.4277	95.7	2.557	
1984.0529	232.0	0.437		1984.3724	91.9	2.347	
1984.0557	232.0	0.435		ADS 8145	A 2776 AB	98914	11231+0408
1984.3750	232.3	0.430		1983.0507	99.8	0.152	
1984.3860	232.2	0.433		1984.3778	103.8	0.128	
1984.9974	232.9	0.413		1984.3801	102.0	0.132	
+13 2274	CHARA 31	91498	10341+1222	-00 2442	RST 4944	99651	11279-0142
1983.4277	180.8	0.192		1983.0508	293.6	0.242	
ADS 7844	A 2055 AB	91751	10366+4430	1983.0699	293.8	0.247	
1983.0671	162.0	0.329		1984.0529	293.5	0.246	
1984.0583	160.5	0.322		1984.3805	292.0	0.237	
1984.3833	162.1	0.327		1984.3833	291.7	0.241	
ADS 7852	I 857	91955	10366-2846	ADS 8189	STT 234	100018	11308+4117
1984.3805	272.0	0.262		1983.4167	124.9	0.291	
ADS 7896	A 2768	92749	10427+0335	1984.0529	129.7	0.300	
1983.0507	335.4	0.204		1984.3751	129.9	0.305	
1984.0529	329.5	0.214		1984.3833	130.3	0.307	
1984.3778	322.9	0.223		ADS 8198	Hu 1134	100235	11322+3615
1984.3805	323.3	0.220		1984.3833	125.9	0.057	
1984.3859	324.9	0.225		ADS 8197	STT 235	100203	11324+6105
ADS 7915	Ho 532	-----	10453+3831	1983.4169	241.6	0.451	
1983.4277	131.9	0.371		1984.0529	247.4	0.469	
				1984.0557	247.6	0.468	
				1984.3750	250.2	0.477	

TABLE IV. (continued)

ADS 8210	Hu 727	233841	11332+4928	ADS 8535	STT 249 AB	107922	12238+5410
	1984.0530	232.2	1.161		1983.0508	267.84	0.406
ADS 8231	STF 1555 AB	100808	11363+2747		1983.4141	266.9	0.411
	1983.0482	143.1	0.578		1984.0530	266.5	0.407
	1983.4279	142.9	0.573		1984.3726	266.6	0.393
	1984.3726	143.3	0.579		1984.3778	266.0	0.401
	1984.9977	143.5	0.587		1985.4812	266.0	0.415
	1985.4894	143.4	0.599	ADS 8540	STT 250	108005	12244+4306
ADS 8249	STF 1559	101150	11388+6421		1983.0482	343.6	0.376
	1983.0508	322.6	1.957		1983.4141	342.5	0.372
	1984.9977	322.5	1.929		1985.4812	345.0	0.374
-03 3167	RST 5524	101969	11441-0448	ADS 8539	STF 1639 AB	108007	12244+2535
	1983.4141	354.9	0.340		1983.0482	326.0	1.539
+22 2411	CHARA 35	-----	11516+2207		1983.4279	325.3	1.521
	1983.4279	142.1	0.176	ADS 8551	A 78	108320	12267-0535
-04 3155	CHARA 36	103036	11518-0546		1983.4141	141.5	0.179
	1983.4277	55.2	0.234		1984.3862	142.5	0.160
ADS 8347	A 1777 AB	103483	11551+4629	ADS 8555	B 228	108410	12274-2843
	1983.4141	157.2	0.107		1984.3779	138.5	0.222
	1984.0530	162.2	0.105	HR 4789	WRH	109485	12348+2238
	1984.3751	164.2	0.107		1983.0699	9.4	0.327
	1984.3834	163.9	0.103		1983.4169	11.4	0.320
	1985.4894	167.9	0.109		1984.0531	10.3	0.319
ADS 8387	A 1088	104288	12005+6912		1984.0613	10.1	0.314
	1983.0508	280.0	0.140		1984.3727	9.8	0.305
	1983.4141	281.2	0.140		1985.4894	8.2	0.303
	1984.0530	282.4	0.130	+27 2158	Cou 596	110297	12409+2708
	1984.3834	284.8	0.131		1983.0699	194.5	0.125
	1985.4812	288.9	0.127		1984.3834	193.5	0.099
+48 1992	Cou 1752	-----	12018+4728		1985.4813	193.3	0.090
	1984.0530	71.7	0.172	ADS 8630	STF 1670 AB	110379-0	12417-0127
	1984.3834	69.1	0.162		1983.4279	292.6	3.461
ADS 8419	STF 3123 AB	105122	12061+6842	HR 4891	CHARA 38	111998	12532-0333
	1983.0508	319.7	0.140		1984.3752	164.0	0.442
	1983.0699	317.8	0.143	ADS 8708	STT 256	112398	12564-0057
	1983.4141	314.0	0.142		1983.4279	95.8	0.955
	1984.0530	310.4	0.143		1984.3727	95.0	0.971
	1984.0557	310.8	0.146		1984.3861	95.5	0.968
	1984.3726	305.3	0.159		1984.9978	95.6	0.960
	1984.3778	306.7	0.149	+09 2696	Fin 380	112503	12572+0818
	1984.3834	307.1	0.147		1983.0699	150.4	0.112
	1985.4894	296.3	0.150		1983.4199	152.6	0.117
GI 9392	Wor 22	-----	12101+0526		1984.0531	152.9	0.118
	1984.3861	318.1	1.439		1984.3727	154.1	0.136
GI 9392	Wor 22 AC?	-----	12101+0526		1984.3779	153.2	0.124
	1984.3861	69.9	0.363		1984.3834	154.8	0.125
ADS 8463	B 221	106271	12137-2719		1985.4813	155.5	0.138
	1983.4141	108.0	0.350		1985.4894	153.0	0.138
ADS 8481	Bu 920	106612	12158-2321	GL 491	B 2541	112758	12591-0951
	1984.9976	300.2	1.604		1983.4280	109.9	0.768
ADS 8486	STF 1621	-----	12160+0539	ADS 8727	CHARA 39 Aa	112846	12597-0348
	1983.4141	0.4	0.607		1984.0558	19.5	0.107
HR 4668	CHARA 37	106760	12165+3304		1984.3779	32.5	0.103
	1983.0482	171.6	0.248		1984.3862	28.9	0.092
HR 4689	Mca 37	107259	12199-0040	ADS 8757	Bu 341	113415	13038-2035
	1983.0482	346.3	0.149		1983.4304	311.9	0.796
	1983.0699	348.2	0.140		1984.0531	311.8	0.790
	1983.4141	352.5	0.146	ADS 8759	Bu 929	113459	13039-0340
	1983.4169	351.7	0.140		1983.4280	202.1	0.686
	1984.0529	2.3	0.136		1984.0558	201.7	0.685
	1984.0557	2.4	0.137		1984.3779	201.7	0.687
	1984.0583	2.9	0.138		1984.3861	201.9	0.687
	1984.0612	2.2	0.132		1984.9978	201.8	0.680
	1984.3726	7.2	0.135		1985.4894	201.4	0.681
	1984.3751	7.0	0.132	GL 497	Wor 23	-----	13048+5555
	1985.0004	18.1	0.120		1983.0508	151.6	1.448
	1985.4812	30.6	0.112		1983.4279	141.6	0.687
ADS 8525	B 227	107539	12216-2716	+61 1335	MLR 154	113810	13052+6052
	1983.4141	156.5	0.150		1984.0530	86.8	0.069
				ADS 8785	A 1605	234012	13069+5200
					1984.3862	165.9	0.938

TABLE IV. (continued)

ADS 8801	McA 38 Aa	114330	13100-0532	ADS 8987	Bu 612 AB	118889	13396+1044
1983.0699	326.4	0.481		1983.0510		202.93	0.276
1984.0532	328.7	0.454		1983.0701		201.1	0.280
1984.3752	327.9	0.466		1984.0532		208.0	0.285
1984.3807	327.4	0.459		1984.3727		207.9	0.284
1985.4840	327.9	0.472		1984.3752		208.7	0.290
ADS 8804	STF 1728 AB	114378-9	13100+1731	1984.3835		209.1	0.289
1983.0699	191.8	0.627		1985.4813		213.8	0.299
1983.4199	193.0	0.610		ADS 8988	Hu 897	-----	13400+3759
1984.0558	193.1	0.613		1984.0559		30.7	0.378
1984.0586	193.0	0.609		ADS 8994	Fin 352 AB	119086	13415-2327
1984.3727	193.0	0.612		1983.4307		323.0	0.184
1984.3807	193.2	0.611		1984.3779		320.1	0.177
1985.0031	192.8	0.600		1984.3862		321.6	0.184
1985.4813	192.9	0.588		HR 5178	Kui 65	120033	13472-0943
HR 4978	Fin 305	114576	13117-2633	1983.0701		243.0	0.333
1984.3779	116.3	0.100		1983.4332		242.4	0.335
ADS 8814	STT 261	114723	13120+3205	1984.0531		243.5	0.333
1983.0508	339.5	2.325		1984.3779		243.2	0.323
ADS 8831	Fin 297 AB	114993	13145-2417	1984.3807		241.4	0.330
1983.4332	134.9	0.183		ADS 9031	STF 1785	120476	13492+2659
1984.3779	136.8	0.187		1983.0510		164.8	3.288
ADS 8843	STT 263	-----	13167+5034	-13 3786	RST 3852	121136	13539-1439
1984.3864	134.4	1.820		1983.4307		137.1	0.154
HR 5014	Fin 350	115488	13175-0041	1984.3862		132.8	0.137
1983.0701	349.1	0.078		GL 9465	Ald 112	-----	14019+1530
1983.4332	355.3	0.089		1983.0510		182.3	1.579
1984.0532	1.2	0.119		ADS 9094	Bu 1270	122769	14037+0829
1984.3752	5.9	0.109		1984.3754		58.5	0.153
1984.3807	5.6	0.110		1984.3781		58.0	0.158
1984.3835	6.2	0.111		1984.3835		59.2	0.153
1985.4840	14.2	0.122		HR 5298	CHARA 40	123630	14090-1020
ADS 8863	A 2166	115955	13202+1747	1983.4307		31.6	0.287
1983.0510	190.3	0.113		ADS 9158	STT 277 AB	124346	14124+2843
1983.0701	191.9	0.102		1983.0510		40.0	0.309
ADS 8864	STF 1734	115995	13207+0257	1984.0559		41.2	0.301
1983.0510	178.6	1.100		1984.3728		41.4	0.302
1983.4332	178.4	1.087		1984.3754		41.4	0.302
1984.3779	178.7	1.080		1985.4813		42.4	0.302
1984.3807	178.6	1.076		ADS 9174	STF 1816	124587	14139+2906
ADS 8887	HO 260	116495	13236+2914	1983.0510		88.6	0.751
1984.0558	74.3	1.180		1984.3728		88.8	0.741
1985.4840	74.9	1.230		1984.3781		88.9	0.737
ADS 8903	STT 267	117173	13253+7559	HR 5323	CHARA 41 AC	124570	14141+1258
1984.3754	15.3	0.100		1984.3754		120.3	0.190
ADS 8901	A 1609 AB	116878	13258+4430	ADS 9182	STF 1819	124757	14153+0308
1985.4866	284.0	0.219		1984.3754		234.0	0.857
ADS 8904	AG 187	117009	13272+2028	+27 2367	DAN	125709	14205+2634
1984.0558	123.7	1.588		1984.3754		170.6	0.054
1985.4840	123.5	1.620		ADS 9247	Bu 1111 BC	126128	14234+0827
+31 2500	Wor 24	-----	13320+3109	1984.3754		45.9	0.273
1984.3781	302.7	0.180		ADS 9264	A 2069	126695	14268+1625
1984.3807	302.3	0.174		1984.3754		262.4	0.179
VYS 144 AB	VW Com	-----	13328+1649	1984.3781		265.5	0.174
1983.0510	37.9	3.065		1985.4841		258.5	0.200
1984.3865	39.6	3.060		HR 5435	γ Boo	127762	14321+3819
ADS 8939	STT 269 AB	117902	13328+3454	1984.3835		177.5	0.177
1983.0511	243.3	0.140		ADS 9301	A 570	127726	14323+2641
1983.0701	242.1	0.130		1983.0701		340.0	0.161
1984.0532	255.8	0.127		1983.4307		334.2	0.155
1984.3728	259.0	0.114		1984.0559		324.8	0.151
1984.3754	248.0	0.104		1984.3728		320.5	0.155
1984.3835	247.7	0.102		1984.3754		318.6	0.151
1985.4840	254.0	0.080		1984.3835		318.6	0.151
ADS 8954	Bu 932 AB	118054	13348-1313	1985.4813		298.7	0.152
1983.4304	50.9	0.342		ADS 9323	CHARA 42 Aa	128563	14373+0217
1984.0558	51.0	0.344		1984.3865		161.0	0.210
1984.3727	51.0	0.343		ADS 9329	STF 1863	128941	14381+5135
1984.3807	51.1	0.345		1983.0701		67.5	0.643
ADS 8964	AG 190	-----	13357+4939	1984.3754		68.4	0.636
1984.3864	12.8	2.540		1984.3809		68.4	0.638
ADS 8980	ES 608	-----	13380+4808	1985.4813		68.1	0.651
1984.3864	306.1	2.273					

TABLE IV. (continued)

HR 5472	McA 40	129132	14403+2158	-12 4227	CHARA 44	135681	15168-1302
	1983.0701	267.1	0.070		1983.4199	175.6	0.192
	1984.3835	244.4	0.048	ADS 9578	STF 1932 AB	136176	15183+2649
-21 3946	RST 2917	129065	14411-2237		1983.4281	253.0	1.431
	1984.3755	187.4	0.364		1984.3865	253.4	1.457
	1984.3781	187.5	0.374	ADS 9578	CHARA 45 Aa	136176	15183+2649
ADS 9343	STF 1865 AB	129246-7	14411+1344		1984.3837	66.3	0.333
	1984.0532	303.8	0.961	+24 2847	Cou 103	-----	15200+2338
	1984.3781	303.5	0.961		1983.4200	282.4	0.538
	1984.3837	303.0	0.965	ADS 9617	STF 1937 AB	137107-8	15232+3018
	1985.4895	302.8	0.969		1983.0702	355.4	0.663
ADS 9352	Hu 575 AB	-----	14426+1930		1983.4281	359.1	0.669
	1983.0702	338.5	0.501		1984.3729	5.3	0.744
	1985.4895	323.3	0.427		1984.3782	5.0	0.743
ADS 9378	STT 285	130188	14455+4222		1985.4896	10.6	0.829
	1983.0701	331.3	0.276	+40 2878	Cou 1441	-----	15233+4022
	1984.3729	325.1	0.287		1984.3782	14.9	0.226
	1984.3782	326.3	0.285		1985.4841	16.7	0.248
	1985.4814	321.4	0.301	ADS 9626	STF 1938 BC	137392	15245+3721
	1985.4896	320.8	0.307		1983.4200	15.2	2.096
HR 5504	Fin 309	129980	14462-2110	ADS 9628	Hu 149	137588	15246+5413
	1984.3755	274.8	0.186		1983.4281	273.6	0.593
	1984.3781	274.4	0.187		1984.3729	273.6	0.599
ADS 9389	STF 1884	130603	14485+2422	+42 2601	Cou 1443	137896	15272+4133
	1984.3782	56.3	2.036		1983.4200	178.6	0.474
ADS 9392	STF 1883	130604	14489+0557		1984.3782	178.1	0.487
	1983.0702	291.8	0.445		1985.4841	178.3	0.498
	1984.3729	289.7	0.475	HR 5747	β CrB	137909	15278+2906
	1985.4814	289.3	0.511		1983.0511	163.7	0.200
ADS 9395	Hu 141	130558	14492-1050		1983.0702	162.3	0.205
	1983.0702	109.9	0.289		1983.4200	160.6	0.221
	1983.4199	109.9	0.285		1983.7150	158.0	0.243
ADS 9396	Bu 106 AB	130559	14493-1409		1984.0587	156.2	0.263
	1984.3755	1.0	1.820		1984.3756	153.8	0.276
ADS 9400	A 1110 AB	130726	14497+0800		1984.7007	153.1	0.285
	1983.0702	246.8	0.615		1985.4814	148.2	0.306
	1984.3729	248.7	0.618	ADS 9682	Hu 1163	138439	15307+3810
	1985.4814	248.4	0.637		1984.3782	28.4	0.113
ADS 9425	STT 288	131473	14534+1543		1985.4814	39.4	0.110
	1984.3837	171.1	1.316	ADS 9688	A 1634 AB	138629	15318+4053
	1984.3865	170.9	1.315		1984.3756	198.6	0.055
ADS 9453	Bu 239	132219	14587-2739	HR 5778	Cou 610	138749	15329+3121
	1984.3755	350.3	0.557		1983.4281	203.4	0.671
	1984.3781	350.5	0.534		1984.3756	203.0	0.678
+47 2190	Cou 1760	-----	14593+4649		1985.4814	202.8	0.696
	1984.3755	202.2	0.187		1985.4896	202.7	0.694
	1985.4841	204.4	0.195	+27 2513	Cou 798	-----	15347+2655
ADS 9480	Bu 348 AB	132933	15018+0008		1983.4200	57.2	0.154
	1983.4200	109.2	0.502		1985.4841	64.1	0.139
	1984.3729	109.5	0.505	ADS 9716	STT 298 AB	139341	15361+3948
	1985.4814	109.0	0.511		1983.4281	230.5	0.470
ADS 9494	STF 1909	133640	15039+4739		1984.3756	237.0	0.420
	1983.4200	41.7	1.151		1984.3782	237.1	0.419
	1984.0532	42.7	1.193	ADS 9731	STF 1964 CD	139691	15382+3614
	1984.3729	43.3	1.210		1983.4281	18.9	1.532
	1984.3782	43.2	1.216	-19 4165	CHARA 48	139364	15384-1955
	1985.4841	44.7	1.314		1983.4308	165.9	0.271
ADS 9515	RST 4534 AB	134213	15089-0610	+26 2712	Cou 612	139749	15390+2545
	1983.4199	11.6	0.356		1983.4200	275.3	0.170
ADS 9530	A 1116	134827	15116+1008		1984.3756	267.7	0.179
	1983.0702	46.0	0.742		1985.4843	261.6	0.186
	1983.4200	47.3	0.738	ADS 9735	Bu 122	139628	15399-1947
	1984.3729	46.9	0.729		1983.4308	223.5	1.785
	1984.3781	46.5	0.740	ADS 9742	A 2076	139939	15405+1841
HR 5654	Cou 189	134943	15121+1858		1983.4200	180.1	0.632
	1983.4281	143.2	0.442		1984.3757	180.4	0.635
	1984.0532	144.8	0.446		1985.4843	180.5	0.647
	1984.3755	143.5	0.443	ADS 9744	Hu 580 AB	140159	15416+1941
	1984.3781	144.1	0.441		1983.0702	74.7	0.156
	1985.4895	143.2	0.453		1983.4281	77.8	0.138
ADS 9532	B 2351 Aa	134759	15123-1947		1984.3757	84.1	0.087
	1983.4308	6.0	0.154				
	1984.0587	1.6	0.167				
	1984.3755	358.1	0.150				

TABLE IV. (continued)

+42 2629	Cou 1445	140432	15420+4204	HR 6032	Fin 354	145589	16115+0943
	1983.4200	222.3	0.1139		1983.4200	83.2	0.124
	1985.4841	223.4	0.113		1983.7151	85.8	0.126
ADS 9757	STF 1967	140436	15428+2618		1984.3730	84.0	0.130
	1983.4200	120.7	0.425		1984.3757	84.3	0.124
	1984.3756	120.4	0.448		1985.4843	84.3	0.127
	1985.4843	119.4	0.486	ADS 9951	Bu 120	145501-2	16120-1927
ADS 9758	Bu 619	140438	15431+1340		1983.4282	2.0	1.219
	1983.4282	3.6	0.655	ADS 9969	CHARA 52 Aa	145958	16133+1333
	1983.4308	3.3	0.658		1983.4281	123.7	0.209
	1984.3757	3.4	0.660	ADS 9971	RST 3936 AB	145996	16143-1024
	1985.4843	3.5	0.675		1983.4200	267.9	0.302
+22 2878	Cou 106	140629	15440+2220		1984.3729	267.6	0.302
	1983.4200	272.8	0.392	-3012986	I 1586	146177	16161-3037
	1985.4843	272.3	0.400		1983.4254	257.4	0.321
ADS 9775	Bu 620 AB	140722	15462-2804	ADS 10006	STT 309	147275-6	16192+4140
	1983.4282	170.6	0.534		1983.4200	284.0	0.318
	1984.3783	170.8	0.528		1984.3730	286.0	0.310
	1985.4978	170.8	0.543		1985.4814	287.0	0.322
ADS 9775	CHARA 50 Aa	140722	15462-2804	ADS 10005	B 1808 AB	147104	16205-2008
	1983.4282	71.7	0.216		1984.3783	173.9	0.117
	1984.3783	108.3	0.199	HR 6084	σ Sco Aa	147165	16212-2536
GI 9529AB	Cou 66	-----	15465+1956		1983.4254	92.9	0.377
	1985.4896	144.2	0.876		1984.3783	92.3	0.384
ADS 9783	A 2077	-----	15469+1904	HR 6103	CHARA 53 Aa	147677	16221+3053
	1985.4843	233.1	0.544		1984.3783	74.7	0.153
ADS 9794	A 1127	141730	15474+5929	-16 4280	CHARA 54	147473	16229-1701
	1983.4200	286.7	0.316		1984.3783	91.6	0.081
	1984.3729	287.9	0.312		1985.4978	89.9	0.105
	1985.4841	288.0	0.324	ADS 10052	STF 2054	148374	16238+6141
ADS 9806	Hu 912	142089	15492+6032		1983.4309	352.6	1.009
	1983.4200	280.9	0.169		1984.3784	352.5	1.008
	1984.3729	286.3	0.168		1985.4844	352.4	1.019
	1984.3756	286.8	0.155	ADS 10068	Bu 814	148552	16272+3952
	1985.4841	295.5	0.134		1983.4202	352.8	0.312
ADS 9812	Hu 153	141898	15519-1232		1985.4814	353.5	0.310
	1983.4200	71.9	0.410	-15 4324	RST 3950	148394	16286-1613
	1985.4923	74.1	0.408		1983.4254	70.8	0.261
ADS 9834	Hu 1274	142378	15550-1923		1984.3783	69.2	0.267
	1983.4254	120.6	0.556	ADS 10075	STF 2052 AB	148653	16289+1825
ADS 9836	I 977	142456	15557-2645		1983.4309	131.6	1.535
	1983.4254	151.4	0.248		1984.3730	130.9	1.561
	1984.3783	152.3	0.178		1985.4844	130.1	1.617
HR 5953	δ Sco	143275	16003-2237	ADS 10087	STF 2055 AB	148857	16310+0159
	1983.4254	172.6	0.173		1983.4308	15.3	1.216
	1984.3783	174.7	0.171		1984.3730	16.4	1.227
ADS 9909	STF 1998 AB	144069-0	16044-1122	ADS 10092	STF 3105	148931	16318-0702
	1983.4282	27.5	0.981		1983.4308	202.9	0.331
	1984.3783	29.4	0.954		1984.3729	202.3	0.342
ADS 9913	Bu 947 AB	144217	16054-1948		1985.4869	201.1	0.347
	1983.4282	132.9	0.379	HR 6168	σ Her	149630	16341+4227
	1984.3783	132.9	0.376		1984.7007	204.0	0.083
	1985.4868	134.9	0.368		1985.4844	198.9	0.102
ADS 9913	McA 42 CE	144218	16054-1948	ADS 10129	STF 2078 AB	150117-8	16363+5255
	1983.4226	68.7	0.108		1983.4309	105.5	3.213
	1984.3783	85.2	0.087	+74 0680	MLR 198	151746	16420+7353
ADS 9931	A 1798	144935	16079+1425		1983.4309	186.7	0.209
	1983.4200	25.9	0.156		1983.7151	185.4	0.204
	1983.7151	27.3	0.157		1984.3730	183.6	0.194
	1984.3730	25.4	0.155		1985.4844	177.9	0.183
	1985.4844	24.0	0.159	ADS 10189	Hu 664	151267	16437+5132
ADS 9935	Bu 355 AB	145246	16081+4524		1983.4202	301.8	0.464
	1983.4200	280.5	0.281		1984.3730	301.7	0.463
	1984.3730	281.3	0.275		1984.3784	301.7	0.467
	1985.4844	281.0	0.270		1985.4814	302.6	0.479
ADS 9932	Bu 949	144892	16085-1006	ADS 10184	STF 2094 AB	151070	16442+2331
	1983.4282	194.3	0.405		1983.4309	74.8	1.230
	1984.3729	194.2	0.417		1984.3784	74.9	1.229
	1985.4869	194.6	0.428	+72 0751	MLR 182	152027	16446+7145
-3012880	I 557	144926	16094-3103		1983.7151	41.9	0.164
	1983.4254	226.6	0.199		1984.3784	29.0	0.153
					1985.4844	20.0	0.151

TABLE IV. (continued)

+29 2876	Cou 490	151236	16450+2928	ADS 10459	Bu 628	-----	17184+3239
	1983.4200	26.6	0.191		1984.3732	284.8	0.462
	1984.3784	25.0	0.197	ADS 10465	Bu 126 AB	156717	17198-1745
	1985.4845	21.2	0.197		1983.4310	262.9	2.296
ADS 10229	STF 2106	152113	16511+0925	HR 6469	McA 47	157482	17217+3958
	1983.4309	180.3	0.545		1982.5027	154.5	0.106
	1984.3784	180.5	0.550		1983.0702	161.6	0.108
-2412876	B 2397	151902	16514-2450		1983.4202	165.4	0.101
	1984.3812	336.3	0.097		1983.7151	171.0	0.102
ADS 10230	STT 315	152127	16515+0113		1984.3732	180.2	0.095
	1983.4200	352.9	0.186		1984.3760	181.5	0.083
	1984.3784	347.8	0.207		1984.3840	181.6	0.082
	1984.3840	346.8	0.201		1984.7009	188.6	0.072
	1984.7009	345.6	0.213		1985.4816	225.4	0.051
	1985.4845	342.4	0.235	+23 3092	Cou 415	157392	17221+2310
ADS 10252	B 323	152535	16550-2431		1983.4202	67.1	0.157
	1983.4254	92.5	0.475		1984.3759	54.5	0.146
ADS 10257	Bu 241	152655	16555-2134		1984.3813	55.4	0.148
	1983.4282	8.8	0.368	-09 4546	RST 3972	157498	17240-0921
	1984.3785	9.0	0.362		1983.4202	83.4	0.227
	1984.3812	9.6	0.369		1984.3757	93.0	0.219
ADS 10279	STF 2118	153697	16563+6502		1984.3812	93.3	0.219
	1983.4309	70.2	1.111	ADS 10531	Hu 1179	157853	17241+3834
	1984.3730	70.3	1.099		1984.3840	294.3	0.051
	1984.3784	70.5	1.111		1984.7009	294.8	0.056
ADS 10265	Bu 1117	152849	16568-2309	ADS 10573	Bu 1201	158867	17263+6746
	1983.4282	297.7	0.953		1983.4202	343.4	0.195
	1984.3785	297.6	0.955		1984.3732	341.8	0.178
ADS 10287	Hu 162	153305	16593-1655		1984.3760	342.4	0.181
	1984.3785	215.9	0.624	ADS 10561	A 2244	158122	17283-2058
ADS 10312	STF 2114	153914	17019+0827		1984.3785	88.2	0.232
	1983.4308	186.9	1.229		1985.4843	85.7	0.245
	1984.3785	187.5	1.230	ADS 10585	A 351	-----	17294+2924
ADS 10345	STF 2130 AB	154905-6	17054+5427		1982.5027	242.5	0.535
	1982.5027	42.8	2.034		1983.4202	243.9	0.584
	1983.4309	42.2	2.044	ADS 10598	STF 2173	158614	17303-0103
+38 2885	Cou 1291	155039	17075+3810		1983.4309	160.6	0.770
	1984.3784	217.8	0.108		1984.3757	159.0	0.837
	1985.4844	228.5	0.109		1984.3812	159.0	0.837
ADS 10360	Hu 1176 AB	155103	17081+3555	+19 3336	Cou 499	158956	17313+1901
	1982.5027	347.1	0.069		1984.3813	60.6	0.150
	1983.0702	315.6	0.067	ADS 10624	Hu 1181	159304	17326+3445
	1984.3784	144.5	0.074		1983.4202	8.6	0.116
	1984.7008	134.7	0.095		1983.7152	9.6	0.113
	1985.4816	120.6	0.129		1984.3759	18.5	0.083
ADS 10355	A 1145	154895	17082-0105		1984.3840	18.9	0.080
	1983.4200	17.8	0.412	HR 6560	Mlr 571	159870	17335+5734
	1984.3785	16.4	0.424		1982.5027	359.3	0.149
	1984.3840	15.6	0.423		1983.0702	352.6	0.147
	1985.4845	14.1	0.440		1983.4202	356.1	0.142
-19 4547	McA 46	155095	17103-1926		1983.7151	355.6	0.144
	1984.3785	115.0	0.123		1984.3732	355.3	0.143
	1984.3812	115.0	0.122		1984.3760	353.1	0.140
ADS 10374	Bu 1118 AB	155125	17103-1544		1984.3840	353.3	0.141
	1984.3785	260.2	0.383	+68 0946	CHARA 62 Aa	-----	17365+6823
	1984.3812	260.1	0.385		1984.3760	1.3	0.292
	1985.4869	258.1	0.403	+45 2566	Cou 1595	160214	17365+4543
ADS 10385	Hu 169	155317	17115-1629		1982.5027	250.4	0.414
	1983.4254	43.5	0.165		1983.4309	252.9	0.408
	1984.3785	35.4	0.153	ADS 10659	A 1156	159857	17366+0722
	1984.3812	34.7	0.147		1984.3759	3.8	0.084
+45 2505	Kui 79 AB	155876	17121+4544		1984.3813	3.8	0.079
	1982.5027	254.9	1.008		1985.4869	2.1	0.084
	1984.3784	241.9	1.120	ADS 10657	Hu 751	159663	17368-2058
	1985.4844	234.0	1.127		1985.4843	240.7	0.090
ADS 10423	A 2592	156034	17157-0949	+27 2853	Kui 83 AB	-----	17370+2753
	1983.4202	227.7	0.357		1982.5028	10.3	0.241
	1984.3785	224.9	0.360		1983.4202	349.7	0.229
	1984.3811	224.9	0.361		1983.4309	349.7	0.224
	1985.4869	223.1	0.340		1984.3813	329.9	0.220
-3013996	Bu 1119	156184	17173-3010				
	1983.4255	83.2	0.341				
	1984.3812	86.0	0.321				

TABLE IV. (continued)

ADS 10696	Bu 631	160438	17399-0039	ADS 10899	A 2189	163471	17563+0259
1983.4202	140.3	0.085		1984.3787		339.0	0.112
1983.7152	140.3	0.091		1984.3842		342.2	0.121
1984.3757	135.4	0.093		ADS 10905	McA 49 Aa	163640	17564+1820
1984.3812	135.2	0.092		1983.7097		69.1	0.069
1984.7007	131.8	0.093		ADS 10905	STF 2245 Aa,B	163640	17564+1820
1985.4816	130.1	0.106		1982.5028		292.9	2.534
+21 3188	Cou 114	160935	17418+2130	1983.7097		291.6	2.609
1982.5028	30.8	0.288		ADS 10912	STF 2244	163624	17571+0004
1983.4312	32.2	0.286		1983.4312		88.3	0.278
1984.3759	32.5	0.284		1984.3787		90.8	0.294
1984.3813	32.4	0.283		1984.3842		92.0	0.295
1985.4816	32.7	0.290		-19 4777	CHARA 66	163680	17582-1916
ADS 10743	Hu 1285	161258	17436+2237	1983.4312		110.0	0.392
1983.4203	224.2	0.546		+04 3562	Kui 84	-----	17584+0427
1984.3759	223.7	0.551		1985.4872		100.7	0.142
1984.3813	223.7	0.550		+24 3298	Cou 115	-----	18000+2449
1985.4869	223.1	0.553		1983.4203		111.0	0.271
ADS 10786	AC 7 BC	161797	17465+2745	1983.7098		114.6	0.267
1983.4312	49.6	1.475		1984.3787		112.9	0.272
1985.4978	55.8	1.610		ADS 11005	STF 2262 AB	164764-5	18030-0811
HR 6641	CHARA 64	162132	17471+4737	1983.4312		276.6	1.860
1985.4924	110.4	0.144		+40 3270	Cou 1785	165311	18035+4032
ADS 10795	STF 2215	161833	17472+1742	1983.4227		57.7	0.156
1983.4255	266.4	0.558		1984.3760		54.7	0.142
1985.4869	265.6	0.563		+42 2995	Cou 1786	165503	18043+4205
+37 2949	Cou 1145	162338	17490+3704	1984.3840		129.6	0.084
1982.5027	7.4	0.105		1985.4978		144.5	0.085
1983.0703	0.2	0.108		ADS 11060	STT 341 AB	165590	18059+2126
1983.4227	357.4	0.114		1982.5083		89.7	0.364
1983.7152	352.7	0.117		1982.7650		90.1	0.384
1984.3759	345.5	0.117		1983.4203		89.1	0.406
1984.3840	346.6	0.117		1983.7098		90.6	0.427
1985.4816	335.7	0.128		1984.3787		90.7	0.443
ADS 10828	STT 337	162405	17505+0715	1985.8423		90.5	0.478
1983.4203	178.6	0.380		ADS 11071	Hu 1186	-----	18063+3824
1984.3759	178.4	0.385		1983.4227		102.1	0.441
1984.3813	177.9	0.382		1983.7098		101.3	0.451
1985.4869	177.4	0.401		ADS 11080	STT 524	165886	18075+1939
+36 2956	Cou 1146	162667	17505+3651	1983.4203		227.1	0.282
1983.4227	151.9	0.249		1983.7097		227.6	0.288
1983.7152	152.4	0.245		1984.3787		225.9	0.291
1984.3759	152.2	0.247		ADS 11098	Hu 314	166157	18086+1839
ADS 10846	A 1164	162670	17519+0724	1983.4203		96.5	0.287
1983.4203	42.8	0.361		1984.3787		96.9	0.288
1984.3757	43.1	0.371		ADS 11111	STF 2281 AB	166233	18095+0401
1984.3812	43.5	0.363		1982.5083		330.7	0.345
1985.4869	43.2	0.363		1982.7650		326.6	0.342
ADS 10850	STT 338 AB	162734	17520+1520	1983.4312		325.0	0.343
1982.5028	352.6	0.812		1983.7097		324.2	0.346
1983.4255	351.4	0.798		1984.3787		322.2	0.349
1984.3759	351.4	0.798		ADS 11128	Hu 674	166820	18097+5024
1984.3813	351.3	0.795		1983.4203		228.7	0.692
ADS 10866	AC 8	163032	17528+2941	1983.7152		229.8	0.699
1983.4227	274.6	0.202		1984.3732		229.0	0.699
1984.3785	273.3	0.202		1985.4869		228.0	0.712
ADS 11006	STT 349	167101	17530+8354	-2314005	RST 5104	166107	18101-2346
1983.4227	45.2	0.355		1983.4227		165.0	0.218
1983.7153	46.2	0.369		ADS 11149	B 2545 AB	166988	18117+3327
1984.3732	47.0	0.358		1982.7651		57.3	0.099
ADS 10871	A 235	163077	17533+2500	1983.0703		54.1	0.102
1983.4312	77.0	0.373		1983.4203		58.4	0.094
1984.3787	78.6	0.384		1983.7097		60.3	0.107
HR 6676	Fin 381	163151	17543+1108	1984.3785		60.4	0.102
1983.4255	326.6	0.117		1984.3840		60.4	0.102
1983.7152	325.7	0.117		1985.4816		62.2	0.104
1984.3787	303.7	0.106		-20 5068	McA 51	167570	18167-2032
1984.3842	305.1	0.106		1982.7650		135.2	0.256
+41 2928	Cou 1601 Aa	-----	17556+4108	1983.4227		133.2	0.249
1982.5027	65.1	0.515		ADS 11228	Bu 246	167815	18177-1940
1983.4312	66.6	0.535		1983.4227		112.3	0.475
+25 3381	Cou 503	163529	17556+2508	HR 6851	CHARA 68	168199	18180+1347
1983.4203	88.3	0.368		1985.8423		41.1	0.055
1984.3787	89.1	0.361					

TABLE IV. (continued)

+20 3741	Cou 202	168743	18205+2055	ADS 11520	A 88 AB	172088	18384-0312
	1983.4203	26795	0.245		1984.3842	1296	0.108
	1985.4845	272.3	0.249		1985.4899	350.1	0.139
HR 6927	X Dra	170153	18208+7245	ADS 11530	Ho 87 AB	172246	18386+1632
	1983.0703	224.8	0.149		1983.4203	33.3	0.215
	1983.7152	211.9	0.119		1984.3760	36.4	0.226
	1984.7009	233.5	0.118		1985.4845	41.0	0.242
	1985.4846	238.4	0.115	ADS 11558	STF 2368 AB	172712	18389+5221
+23 3312	Cou 418	169030	18217+2356		1983.4312	321.1	1.857
	1983.4203	70.0	0.193	HR 7017	Cou 1607	172671	18395+4056
	1985.4845	69.8	0.191		1982.7650	114.0	0.179
-16 4836	CHARA 69	168701	18218-1619		1983.0703	114.3	0.179
	1985.4899	11.0	0.089		1983.4312	114.2	0.177
ADS 11324	AC 11	169493	18249-0135		1984.3760	114.2	0.175
	1983.4312	356.3	0.814		1984.3842	114.2	0.176
ADS 11334	STF 2315 AB	169718	18250+2723		1984.7035	114.6	0.176
	1982.7650	129.3	0.631		1985.4846	114.0	0.178
	1983.4312	128.3	0.627	ADS 11566	Ho 437 AB	172729	18406+3138
	1984.3787	128.3	0.626		1983.4203	130.1	0.413
	1984.7117	128.5	0.626		1984.3787	130.4	0.411
	1985.4871	127.6	0.639		1984.7117	130.8	0.411
ADS 11344	Hu 66 AB	170109	18253+4845		1985.4846	130.7	0.415
	1983.4203	253.0	0.318	ADS 11574	A 2988	172743	18410+2450
	1983.7153	253.0	0.324		1984.7009	172.5	0.134
	1984.3787	252.5	0.319	ADS 11579	STF 2367 AB	172865	18413+3018
	1984.7035	251.7	0.324		1983.0703	113.9	0.059
	1985.4846	251.4	0.322		1983.7153	101.0	0.097
ADS 11344	ST 351 AC	170109	18253+4845		1984.3787	99.1	0.091
	1983.4203	18.0	0.670		1984.3842	100.1	0.093
	1983.7153	18.8	0.673		1984.7009	98.8	0.101
	1984.3787	18.4	0.671		1985.4845	95.7	0.119
	1984.7035	19.0	0.671	ADS 11593	B 2546 Aa	173087	18421+3445
	1985.4846	18.5	0.683		1982.7650	295.5	0.153
ADS 11339	Bu 1203	169725	18261+0046		1983.4204	296.8	0.147
	1983.4312	142.9	0.393		1984.3787	299.2	0.144
HR 6928	CHARA 71	170200	18280+0612		1984.7117	300.2	0.144
	1985.8424	130.8	0.077		1985.4846	301.3	0.146
ADS 11399	CHARA 72 Aa	170580	18301+0404	+18 3786	Cou 816	229303	18433+1847
	1985.8424	176.0	0.142		1983.4204	302.1	0.262
ADS 11454	Hu 322 AB	171365	18338+1744		1983.7153	301.3	0.257
	1983.4203	87.4	0.216		1985.4845	300.7	0.260
	1983.7153	88.5	0.219	ADS 11614	A 859	173160	18439-0013
	1984.3760	90.1	0.230		1983.4203	13.6	0.255
	1984.3842	91.8	0.225		1985.4899	14.7	0.255
	1985.4845	88.0	0.229	ADS 11635	STF 2382 AB	173582-3	18443+3940
ADS 11468	A 1377 AB	171779	18340+5221		1985.4729	354.6	2.501
	1982.7650	96.0	0.260		1985.4872	354.2	2.496
	1983.4312	98.0	0.260	ADS 11635	STF 2383 CD	173607-8	18444+3937
	1984.3760	99.1	0.261		1985.4729	89.0	2.353
	1984.7035	99.4	0.261		1985.4872	89.3	2.358
	1985.4846	99.7	0.264	HR 7035	CHARA 78	173117	18448-2501
HR 6977	CHARA 74	171623	18352+1812		1983.4227	3.1	0.084
	1985.8424	31.1	0.156	ADS 11640	Fin 332 Aab	173495	18455+0530
HR 6984	CHARA 75	171780	18352+3427		1983.4203	131.4	0.153
	1985.8424	76.0	0.253		1985.4816	129.7	0.137
ADS 11479	STT 359	171745	18355+2336		1985.8424	128.2	0.138
	1984.3787	9.9	0.619	ADS 11640	Fin 332 Bab	173495	18455+0530
	1985.4845	9.6	0.633		1985.4816	140.3	0.138
ADS 11483	STT 358 AB	171746	18359+1659		1985.8424	139.4	0.138
	1983.4312	161.4	1.666	ADS 11640	STF 2375 AB	173495	18455+0530
	1984.3787	161.1	1.659		1982.5029	119.4	2.440
+21 3492	Cou 206	342628	18363+2143		1982.7650	118.1	2.512
	1983.4203	123.9	0.143	ADS 11640	Fin 332 Aa, Bb	173495	18455+0530
	1985.4845	123.7	0.120		1982.5029	120.3	2.580
ADS 11584	STT 363	173831	18374+7741		1982.7650	119.2	2.651
	1982.5029	156.1	0.131	ADS 11640	Fin 332 Ab, Ba	173495	18455+0530
	1983.4204	153.3	0.124		1982.5029	118.3	2.319
	1983.7153	157.7	0.118		1982.7650	117.0	2.382
	1984.3787	159.3	0.102	-08 4701	RST 4597	173611	18466-0807
	1984.7009	162.0	0.083		1983.4203	321.1	0.436
	1985.4846	171.6	0.065		1984.3813	321.4	0.438
ADS 11524	Hu 198	172171	18383+0850		1984.7036	321.6	0.440
	1983.4312	136.1	0.438		1985.4872	320.5	0.442
	1985.4871	134.9	0.450				

TABLE IV. (continued)

ADS 11698	Bu 971 AB	174343-4	18475+4926	-05 4884	RST 4618	178286	19082-0520
	1982.7650	37.1	0.286		1985.4872	137.99	0.7081
	1984.3787	36.0	0.291	+12 3818	MCA 54	178452-3	19083+1215
	1984.7009	37.6	0.292		1982.5056	188.2	0.177
	1985.4846	37.9	0.304		1983.4176	181.2	0.182
-18 5070	RST 3198	173805-6	18480-1814		1983.7125	185.7	0.170
	1984.3815	153.6	0.396		1984.3813	185.8	0.168
HR 7072	Kui 88	173928	18487-1836		1984.3843	186.6	0.164
	1983.4229	165.3	0.370		1984.7035	186.4	0.165
	1984.3815	165.5	0.403		1985.4872	185.1	0.171
	1984.7036	165.9	0.409		1985.8424	184.7	0.168
	1985.4900	165.4	0.411	ADS 12101	CHARA 84 Aa	178911	19091+3436
HR 7109	CHARA 80	174853	18520+1358		1985.8424	155.9	0.084
	1985.8424	97.5	0.101	ADS 12126	A 95	179002	19110-0725
+24 3555	Cou 510	174932	18521+2431		1982.7651	70.9	0.290
	1983.4204	154.4	0.189		1983.4230	69.9	0.289
	1983.7153	154.1	0.188		1984.3733	69.3	0.284
	1985.4872	156.8	0.190		1984.7037	68.9	0.291
ADS 11803	A 1891	175060	18541-1352		1985.4872	67.4	0.295
	1983.4203	258.4	0.353	ADS 12147	Bu 1204 AB	179343	19120+0237
	1984.3813	258.4	0.355		1983.4230	185.3	0.247
ADS 11842	A 2192	175543	18558+0327		1983.7125	186.4	0.246
	1983.4229	93.5	0.261		1984.3815	186.3	0.245
	1984.3813	89.9	0.262		1984.7037	185.9	0.242
	1984.7035	89.7	0.262		1985.4873	185.6	0.245
	1985.4872	87.9	0.265	+20 4076	Cou 320	179528	19123+2113
ADS 11897	STF 2438	176560	18575+5814		1983.4176	114.5	0.195
	1983.4204	3.4	0.795		1983.7125	115.2	0.198
	1984.3787	3.3	0.798		1984.7037	113.8	0.194
	1984.7117	3.4	0.801		1985.4873	112.2	0.203
	1985.4871	2.8	0.814	ADS 12160	Bu 139 AB	179588	19126+1651
ADS 11884	CHARA 82 Aa	176155	18582+1722		1983.4176	136.1	0.655
	1984.3843	174.7	0.154		1984.7037	136.0	0.655
HR 7166	Kui 89	176162	18594-1250		1985.4873	135.7	0.660
	1982.7650	264.5	0.174	ADS 12214	B 430	179950	19155-2515
	1983.4229	265.9	0.159		1982.5056	103.2	0.176
	1984.3813	271.0	0.154		1983.4230	104.2	0.191
	1984.7036	273.4	0.151		1984.3732	104.0	0.199
	1985.4872	279.4	0.144		1984.7036	107.1	0.199
+39 3606	Cou 1933	176869	19006+3951	ADS 12261	A 1392	181044	19158+5458
	1983.4204	203.4	0.477		1983.7125	74.0	0.203
	1983.7125	202.1	0.473		1984.7037	73.7	0.185
	1984.3788	201.1	0.477		1985.4900	74.5	0.166
	1984.7117	201.4	0.477	ADS 12239	STT 371 AB	180553	19159+2727
	1985.4899	201.5	0.488		1983.4313	158.1	0.846
ADS 11950	HDO 150 AB	176687	19026-2953		1984.7091	158.5	0.845
	1983.4313	86.8	0.349		1985.4873	158.1	0.863
	1984.3815	77.1	0.384	ADS 12248	CHARA 85 Aa	180555	19164+1433
ADS 11989	H 126	177166	19043-2132		1985.8533	40.0	0.055
	1983.4313	204.6	1.157	ADS 12329	HWE 47	181527	19206+0256
	1984.3815	204.5	1.155		1983.4230	309.3	0.507
ADS 12032	Ho 95	177936	19056+2717		1984.3733	309.1	0.501
	1983.4204	179.0	0.173		1985.4873	309.0	0.516
	1983.7125	180.4	0.177	ADS 12366	Bu 1129	182353	19216+5223
	1984.3788	178.5	0.173		1982.5083	0.5	0.150
	1984.3842	180.0	0.173		1983.4175	1.3	0.140
	1984.7009	178.6	0.172		1983.7125	0.9	0.142
	1985.4871	177.0	0.172		1984.7037	0.2	0.145
	1985.8424	176.9	0.176		1985.4847	358.5	0.151
ADS 12055	MLR 217 Aa	178634	19058+5918	ADS 12501	A 160	183458	19288+2304
	1984.3787	78.9	0.171		1984.7009	72.9	0.301
HR 7262	ι Lyr	178475	19073+3606		1985.4873	73.1	0.304
	1984.3788	52.9	0.074	ADS 12552	A 712	184195	19303+5639
	1984.3842	53.5	0.078		1982.7568	95.3	0.128
	1984.7009	53.4	0.079		1983.4175	95.9	0.135
	1985.4899	50.5	0.081		1983.7126	94.2	0.139
ADS 12061	Kui 90 Ca	178449	19074+3230		1984.7037	97.1	0.147
	1985.4899	176.5	0.315		1985.4900	95.9	0.151
ADS 12079	Ho 98 AB	178617	19081+2705				
	1983.4175	87.4	0.266				
	1983.7125	89.2	0.266				
	1984.3788	88.4	0.261				
	1984.7009	88.4	0.262				
	1985.4899	86.9	0.263				

TABLE IV. (continued)

ADS 12540	McA 55 Aa	183912	19307+2758	ADS 12808	STT 380 AB	186203	19426+1149
	1982.7542	172.8	0.407		1982.7651	77.1	0.443
	1982.7651	173.3	0.407		1983.4230	77.4	0.438
	1983.4175	171.9	0.395		1985.4901	77.4	0.444
	1983.7098	171.4	0.398	ADS 12850	Bu 658	186518	19441+2708
	1984.3733	169.7	0.394		1983.4258	283.6	0.353
	1985.4729	169.5	0.359		1984.7010	284.4	0.354
	1985.4816	166.7	0.400		1985.4847	283.8	0.358
ADS 12567	A 713	184242	19313+4729	ADS 12864	AGC 10 AB	186587	19450+1046
	1983.4175	270.3	0.357		1983.4230	138.8	0.238
	1983.7126	271.0	0.365		1983.7126	139.4	0.239
	1985.4847	271.8	0.360	ADS 12889	STF 2576 AB	186858	19456+3336
+58 1929	McA 56	184467	19311+5835		1983.4313	354.5	2.115
	1983.4175	46.9	0.112		1983.7126	354.7	2.123
	1984.7029	236.7	0.109	ADS 12906	A 1404 AB	186996	19459+3953
	1985.4900	141.4	0.065		1983.4231	296.9	0.165
ADS 12600	Ho 108	184470	19332+3329		1983.7126	299.5	0.168
	1983.4175	30.4	0.240		1984.7039	298.1	0.166
	1983.7098	29.9	0.230		1985.4900	297.8	0.170
	1984.7010	30.2	0.226		1985.8370	295.5	0.148
	1985.4846	28.2	0.230	-01 3824	RST 5143	186778	19466-0123
	1985.8424	28.0	0.230		1983.4230	130.9	0.228
HR 7436	CHARA 87	184603	19336+3846		1983.7126	131.9	0.228
	1985.8424	175.7	0.138		1985.8534	133.9	0.233
ADS 12623	STT 375	184591	19347+1808	ADS 12911	A 108	186847	19471-0810
	1983.4176	176.0	0.594		1983.4230	82.6	0.261
	1983.7100	176.3	0.586		1983.7126	87.3	0.271
	1984.7037	177.1	0.593		1985.8425	88.5	0.269
	1985.4873	177.1	0.600	HR 7536	δ Sge	187076	19474+1832
	1985.8369	177.0	0.595		1983.4340	123.3	0.060
HR 7441	9 Cyg	184759	19348+2928		1985.4846	81.3	0.058
	1985.8369	257.4	0.049	ADS 12962	STF 2583 AB	187259	19487+1148
ADS 12631	A 162	184739	19351+2328		1983.4313	107.4	1.422
	1983.4176	254.8	0.237		1985.4901	107.3	1.445
	1983.7100	254.2	0.245	+18 4252	McA 58	187321-2	19487+1852
	1984.7010	256.5	0.241		1983.4313	97.7	0.405
	1985.4873	256.2	0.245		1984.7010	98.7	0.405
	1985.8369	256.6	0.233		1985.4900	97.8	0.414
+23 3711	Cou 1033	185058	19365+2400		1985.8369	98.1	0.408
	1983.4231	189.7	0.226	ADS 12973	AGC 11 AB	187362	19489+1908
	1983.7100	187.7	0.220		1982.5056	193.9	0.109
	1984.7010	189.7	0.220		1982.7651	191.4	0.119
	1985.4873	189.3	0.230		1983.4231	187.7	0.131
	1985.8369	186.1	0.224		1983.4258	187.9	0.132
+63 1544	MLR 56 AB	185977	19376+6344		1983.4340	187.8	0.132
	1983.4231	91.9	0.122		1983.7155	186.8	0.139
	1985.4900	100.1	0.102		1984.7010	181.6	0.162
ADS 12743	I 656	185447	19400-2203		1985.8369	176.9	0.186
	1983.4258	11.9	0.116	ADS 12986	A 718 BC	187613	19490+4423
+26 3631	Cou 822	185819	19400+2712		1985.4900	37.3	0.214
	1983.4258	143.6	0.236	HR 7554	CHARA 89	187567	19503+0754
	1984.7010	144.7	0.231		1985.8534	70.8	0.078
	1985.4900	145.1	0.236	+23 3798	Cou 1034	187689	19504+2409
HR 7486	Kui 93	185936	19412+1349		1983.4231	207.7	0.248
	1983.4231	307.4	0.168		1983.7155	208.6	0.248
	1983.7126	307.9	0.172		1984.7039	209.1	0.252
	1984.7010	308.2	0.175		1985.4900	209.4	0.253
	1985.4900	308.1	0.179	ADS 13048	B 454	187858	19531-2528
+85 0337	MLR 229	191079	19418+8552		1983.4258	340.4	0.279
	1985.4900	5.4	0.115	HR 7571	CHARA 90	187949	19531-1436
ADS 12798	STT 382	186179	19419+2723		1985.8425	190.0	0.301
	1982.5084	328.5	0.308	ADS 13135	Hu 687	188871	19549+5049
	1982.7651	329.5	0.313		1983.4231	341.7	0.127
	1983.4231	328.9	0.304		1983.7155	344.0	0.123
	1983.7126	329.1	0.307		1984.7039	347.2	0.121
	1984.7010	328.7	0.307		1985.4900	349.0	0.126
	1985.4900	327.8	0.310		1985.8372	355.7	0.129
HR 7499	Kui 94	186307	19419+4015	ADS 13104	STF 2597	188405	19553-0644
	1983.4258	143.4	0.162		1982.7651	303.1	0.135
	1983.7126	142.2	0.162		1983.4230	303.4	0.137
	1984.7039	135.9	0.137		1984.7010	298.5	0.156
	1985.4900	130.5	0.124	ADS 13191	Hu 689	189451	19577+5119
					1983.7155	330.4	0.085
					1984.7012	329.1	0.065

TABLE IV. (continued)

ADS 13176	AC 16 AB	189214	19579+2715	HR 7744	CHARA 94 Aa	192806	20158+2749
1983.7155	235.9	0.418		1985.4901		90.6	0.067
1984.7039	235.9	0.415		ADS 13660	BAR 11 AB	193238	20180+3311
ADS 13186	STT 392 AB	189377	19579+4215	1983.4176		198.6	0.383
1983.4176	222.7	0.107		1983.7156		199.4	0.370
1983.7155	220.3	0.095		1984.7012		198.4	0.369
1984.7012	217.1	0.096		ADS 13686	A 1425 AB	193443	20189+3817
1985.8425	213.9	0.097		1983.4176		270.2	0.135
ADS 13198	STF 2609	189432	19586+3807	1983.7155		270.2	0.139
1983.4286	24.0	1.909		1984.7012		268.6	0.140
HR 7637	Ho 276	189340	19599-0957	1985.4901		267.1	0.140
1983.4258	228.7	0.141		ADS 13777	A 288	194113	20232+2052
ADS 13277	STT 395	190004	20018+2456	1983.7156		198.8	0.110
1982.7542	119.2	0.855		+23 4004	Cou 125	194359	20244+2417
1983.4258	119.0	0.845		1982.7596		115.2	0.364
1984.7039	119.7	0.842		1983.4231		114.8	0.359
1984.7117	119.9	0.843		1983.7156		114.7	0.363
ADS 13312	STF 2624 AB	190429	20035+3602	+54 2344	MLR 588	194719	20246+5527
1982.7596	173.8	1.901		1983.4259		234.5	0.194
1983.4286	173.7	1.875		1983.7128		236.0	0.195
HR 7677	CHARA 92	190590	20050+2313	1984.7012		234.9	0.200
1985.8425	48.6	0.050		-09 5457	RST 4062	194233	20247-0846
ADS 13449	STF 2652	191940	20090+6205	1983.4231		357.6	0.263
1982.5056	222.6	0.289		+60 2125	MLR 503	194932	20250+6118
1982.7651	222.4	0.296		1983.4259		33.2	0.169
1983.4231	222.1	0.290		1983.7126		32.8	0.171
1983.7155	223.0	0.294		ADS 13850	A 730	194882	20251+5935
1984.7012	222.9	0.295		1982.7651		324.5	0.221
1985.8370	221.5	0.300		1983.4287		323.2	0.216
ADS 13461	STT 400	191854	20102+4357	1984.7012		322.5	0.218
1982.5056	56.1	0.176		+59 2231	MLR 433	194933	20253+6001
1982.7653	53.7	0.179		1983.4259		147.3	0.233
1983.4258	47.7	0.179		1983.7126		147.3	0.228
1983.7155	45.7	0.181		1984.7012		147.9	0.232
1984.7012	36.2	0.191		HR 7801	CHARA 97	194215	20254-2840
1985.8425	27.3	0.212		1983.4258		9.9	0.121
ADS 13508	A 282 AB	192124	20121+3429	+33 3914	Cou 1956	195102	20281+3353
1983.7155	23.8	0.096		1983.4259		235.6	0.305
1984.7012	24.9	0.086		1983.7128		236.8	0.310
1985.8425	25.8	0.078		1984.7013		236.5	0.310
ADS 13493	Bu 1205	191841	20123-0805	-2416056	CHARA 98	194810	20285-2410
1983.4177	233.7	0.290		1983.4258		81.8	0.234
+22 3963	Cou 123	346003	20123+2248	ADS 13887	SHJ 323 AB	194943	20289-1750
1983.7155	240.6	0.251		1983.4258		26.5	0.754
1985.4901	239.8	0.245		+26 3915	Wor 9 AB	-----	20302+2651
ADS 13506	STF 2644	191984	20126+0052	1982.7596		316.1	1.007
1982.7598	207.3	2.708		HR 7837	Fin 336	195330	20309-1503
1983.4286	208.0	2.664		1982.5057		214.4	0.109
HR 7735	31 Cyg	192577	20137+4644	1983.4231		212.1	0.108
1985.8425	110.8	0.026		ADS 13944	A 1675	195481	20311+1548
ADS 13564	A 1204	192559	20143+3129	1985.8479		206.0	0.065
1983.7155	138.1	0.348		ADS 13946	CHARA 99 Aa	195482	20312+1116
1984.7039	138.9	0.352		1983.7128		124.9	0.324
1985.4901	138.4	0.352		ADS 13946	DA 1 BC	195482	20312+1116
1985.8425	137.4	0.351		1983.4231		289.0	0.117
ADS 13572	STT 403 AB	192659	20143+4206	ADS 13989	Bu 671	196069	20317+6227
1983.4258	170.7	0.887		1983.4259		319.1	0.469
1984.7012	171.1	0.885		1983.7126		318.8	0.471
+63 1608	MLR 60	193215	20153+6412	ADS 13961	See	195536	20325-1636
1983.4176	341.4	0.206		1983.4231		123.9	0.242
1983.7126	343.8	0.205		+49 3310	McA 61	196089	20331+4950
1984.7012	344.3	0.184		1984.7012		102.9	0.041
1985.8370	337.4	0.172		HR 7866	WRH AB	196093	20339+3515
ADS 13611	A 2095 AB	192911	20156+4339	1982.5057		96.1	0.264
1983.7155	159.7	0.170		1983.7128		97.2	0.280
HR 7755	CHARA 93	192983	20157+5014	1984.7013		98.1	0.281
1985.8370	196.3	0.170		1985.4847		97.2	0.283
HR 7744	McA 60 Aa, B	192806	20158+2749	ADS 14073	Bu 151 AB	196524	20375+1436
1982.5057	141.6	0.240		1982.5057		18.1	0.401
1983.4176	140.0	0.247		1982.7596		20.1	0.387
1983.7156	140.1	0.250		1983.4259		25.7	0.345
1984.7039	140.4	0.258		1985.4929		57.7	0.211
1985.4901	140.3	0.266		1985.8479		67.7	0.191

TABLE IV. (continued)

ADS 14099	Hu 200 AB	196662	20393-1457	ADS 14493	A 756 AB	199937	20577+5850
	1982.5057	111.0	0.328		1983.4177	216.1	0.532
	1982.7598	110.8	0.343		1985.4849	215.3	0.548
	1983.4258	110.2	0.339		1985.8396	214.9	0.550
+04 4510	Kui 99	196795	20396+0458	ADS 14504	STF 2741 AB	199955	20586+5028
	1982.7598	122.9	0.356		1982.7543	26.8	1.891
	1983.4258	114.6	0.417		1983.4287	27.1	1.866
	1985.4929	124.6	0.632	ADS 14499	STF 2737 AB	199766	20591+0418
ADS 14126	STT 410 AB	197018	20396+4036		1983.4287	285.3	0.964
	1983.4259	6.9	0.800	ADS 14526	McA 65 Aa	200120	20598+4732
	1984.7012	7.4	0.799		1982.7651	56.9	0.211
HR 7906	α Del Aa	196867	20397+1556		1983.4340	55.6	0.204
	1985.4929	301.6	0.120		1984.7040	54.5	0.201
	1985.8534	292.3	0.132	HR 8038	Kui 102	199942	21002+0731
ADS 14141	A 747 AB	197117	20397+4735		1982.5057	65.0	0.255
	1983.4259	108.7	0.295		1982.7598	62.7	0.273
	1983.7156	109.7	0.297		1983.4287	60.6	0.283
	1984.7012	109.4	0.309		1985.4902	53.1	0.307
	1985.8396	108.7	0.301	ADS 14543	A 1438	200222	21010+4000
ADS 14148	A 2795	197075	20406+2156		1983.4177	248.3	0.294
	1983.4231	254.5	0.214		1984.7013	248.9	0.299
	1983.7128	254.8	0.219	+23 4216	Cou 128	200290	21019+2340
	1985.4902	253.6	0.229		1982.7596	135.4	0.188
HR 7922	McA 62	197226	20410+3905		1983.4232	135.5	0.184
	1982.5056	97.2	0.102	ADS 14575	STF 2751	200614	21022+5640
	1984.7013	100.4	0.086		1983.4287	353.5	1.561
	1985.4847	98.4	0.081	ADS 14565	See 435	200245	21032-2744
+18 4585	Cou 226 AB	197229	20419+1931		1983.4314	297.6	0.256
	1983.4231	21.1	0.298	ADS 14592	McA 66 Aa	200497	21041-0549
	1983.7128	22.1	0.298		1983.4340	173.2	0.057
-06 5567	RST 4679	197436	20440-0557	HR 8060	Fin 328	200499	21044-1951
	1983.4231	358.6	0.300		1982.7627	149.0	0.306
	1983.7128	359.1	0.309		1983.4259	144.0	0.316
	1985.4902	358.6	0.315		1985.4902	133.8	0.364
ADS 14238	Bu 64 AB	197683	20451+1244	ADS 14617	Hu 590	200927	21048+4902
	1983.4231	162.9	0.605		1983.7100	88.3	0.252
	1983.7128	163.5	0.608		1984.7014	86.9	0.248
ADS 14274	CHARA 100 Aa	197989	20462+3358	ADS 14648	Bu 368 AB	201038	21075-0814
	1983.4340	180.0	0.067		1982.7627	272.5	0.240
HR 7958	Kui 101	198151	20466+4632		1983.4259	276.8	0.237
	1985.8396	108.5	0.377	ADS 14666	STT 527	201221	21080+0509
ADS 14296	STT 413 Aa,B	198183	20474+3629		1983.4232	139.9	0.203
	1982.5056	15.9	0.795		1983.7101	138.8	0.210
	1982.7571	16.1	0.797		1984.7040	137.1	0.214
	1983.4232	16.4	0.790	+57 2295	MLR 590	202107	21114+5737
	1983.4340	16.5	0.787		1983.7100	19.2	0.175
	1983.7128	17.1	0.790	ADS 14749	STF 2780 Aa,B	202214	21118+6000
	1984.7013	17.2	0.801		1982.5057	216.4	1.016
ADS 14306	Bu 268	198253	20476+4204		1982.7599	216.3	1.023
	1983.4177	202.9	0.422		1983.4341	216.8	1.016
	1984.7013	204.1	0.413		1983.7100	217.7	1.010
ADS 14333	J 194 AB	-----	20494+1124		1984.7118	217.2	1.019
	1982.7596	199.7	0.750	ADS 14749	McA 67 Aa	202214	21118+6000
ADS 14360	STF 2729 AB	198571	20514-0537		1982.5057	60.4	0.040
	1983.4314	12.9	0.978		1983.4341	37.1	0.048
	1984.7118	14.0	0.986		1983.7100	50.0	0.043
	1985.4929	13.7	0.987		1984.7118	40.0	0.048
ADS 14379	Ho 144	198810-1	20523+2008	ADS 14761	Hu 767	202128	21135+1559
	1983.4232	348.1	0.317		1982.5057	21.7	0.113
	1983.7128	348.6	0.319		1982.5085	21.2	0.107
HR 7990	McA 64	198743	20527-0859		1982.7626	24.7	0.105
	1983.7128	123.7	0.196		1983.4259	30.2	0.107
ADS 14404	Ho 146	199071	20536+3514		1983.4314	32.9	0.101
	1983.4232	50.8	0.350		1983.4341	33.4	0.096
	1984.7013	51.1	0.338		1983.7101	37.2	0.103
ADS 14412	A 751	199306	20538+5919		1984.7040	49.1	0.091
	1982.5056	160.3	0.134		1985.4849	58.2	0.094
	1982.7651	156.8	0.132	ADS 14783	H 48	202582	21137+6425
	1983.4177	152.8	0.134		1982.7599	255.1	0.470
	1983.7156	152.2	0.135		1983.4341	256.1	0.445
	1984.7013	147.4	0.137		1983.7156	256.8	0.441
	1985.4849	143.7	0.142		1984.7040	257.6	0.413
	1985.8396	142.0	0.144				

TABLE IV. (continued)

ADS 14784	STF 2783	202519	21141+5818	HR 8238	β Cep Aa	205021	21288+7034
1982.7599	7.1	0.734		1982.5031	49.6	0.156	
1983.4341	7.0	0.735		1982.5057	50.8	0.151	
1984.7013	6.9	0.727		1982.7599	51.5	0.159	
ADS 14773	STT 535 AB	202275	21145+1001	1983.4259	51.4	0.151	
1982.5059	38.2	0.132		1983.4341	50.9	0.144	
1982.7600	32.5	0.184		1983.7100	52.1	0.146	
1983.4232	27.6	0.281		1984.7013	51.5	0.129	
1983.4341	27.4	0.283		1985.4849	51.8	0.121	
1983.7101	26.8	0.304		ADS 15007	STF 2799 AB	204509	21289+1105
1984.7040	21.8	0.299		1983.4314	268.6	1.744	
1985.4849	15.6	0.210		ADS 15058	A 771	205085	21315+4817
1985.4929	15.5	0.210		1983.7129	69.2	0.079	
ADS 14775	A 883 AB	202260	21146-0050	ADS 15070	A 2290	205064	21328+0200
1983.4314	59.3	0.128		1983.7129	262.4	0.482	
1985.8535	46.9	0.120		ADS 15103	STT 442	205599	21340+6148
ADS 14787	AGC 13 AB	202444	21147+3802	1983.4341	328.1	0.269	
1982.7599	120.0	0.653		1983.7130	327.6	0.263	
1983.4314	113.0	0.610		ADS 15115	Hu 371	205541	21354+2427
1983.7101	110.2	0.600		1982.5057	297.0	0.277	
ADS 14798	A 1692	202642	21152+5531	1982.7572	295.5	0.289	
1983.4315	154.1	0.326		1982.7626	295.3	0.286	
1983.7100	155.8	0.314		1983.4314	295.8	0.288	
+30 4393	Cou 1183	202882	21180+3049	1983.7129	296.3	0.289	
1983.4259	22.7	0.194		1984.7014	296.9	0.291	
1983.4314	20.5	0.200		1985.8480	297.3	0.298	
1983.7100	20.7	0.204		ADS 15131	Ho 463	205731	21362+4253
1984.7014	20.8	0.201		1983.7129	174.8	0.433	
1985.4902	20.8	0.206		ADS 15176	Bu 1212 AB	206058	21395-0003
ADS 14839	Bu 163 AB	202908	21187+1134	1982.7627	243.3	0.351	
1982.5031	247.9	0.261		1983.7129	246.9	0.371	
1982.7600	245.0	0.261		1985.8480	252.2	0.403	
1983.4314	245.3	0.213		+08 4714	CHARA 105	206155	21400+0911
1983.7156	246.5	0.197		1983.7129	131.6	0.252	
1984.7040	242.5	0.125		ADS 15236	Hu 280	206512	21423+0554
1985.4929	230.0	0.124		1983.7129	133.6	0.197	
HR 8164	-----	203338	21193+5838	1984.7040	135.4	0.196	
1984.7013	117.1	0.092		1985.8480	136.7	0.199	
ADS 14889	STT 437 AB	203358	21208+3228	HR 8300	Kui 108	206644	21425+4106
1982.5057	25.0	2.202		1982.5057	53.5	0.156	
1982.7626	25.0	2.213		1982.5084	53.5	0.163	
ADS 14894	STT 435	203323	21214+0254	1982.7599	50.6	0.163	
1983.4314	233.2	0.642		1983.4341	46.2	0.166	
1983.7101	234.1	0.643		1983.7129	44.6	0.169	
1984.7040	234.3	0.655		1985.4904	31.2	0.187	
1985.8480	235.2	0.624		1985.8479	28.0	0.188	
ADS 14893	A 617	203345	21214+1021	ADS 15251	Bu 688 AB	206656	21426+4103
1982.5032	273.4	0.162		1983.7129	206.4	0.315	
1982.5059	272.7	0.167		1985.4904	205.1	0.330	
1983.4259	265.5	0.165		1985.8479	204.9	0.334	
1983.4314	269.2	0.161		ADS 15281	Bu 989 AB	206901	21446+2539
1983.7101	264.6	0.157		1982.5057	241.1	0.105	
1984.7040	255.8	0.107		1982.5085	234.1	0.101	
ADS 14944	A 765 AB	203938	21238+4710	1982.7544	221.2	0.090	
1983.4314	30.5	0.420		1982.7600	225.0	0.098	
1983.7100	31.0	0.421		1983.4341	177.4	0.091	
1984.7040	30.4	0.425		1983.7129	163.7	0.104	
ADS 14954	Bu 164 AB	203943	21251+0923	1984.7014	137.2	0.167	
1983.4314	211.1	0.183		1985.4929	125.8	0.219	
1983.7101	213.9	0.179		1985.8480	122.7	0.237	
1984.7040	212.8	0.173		+34 4540	Cou 1484	207663	21498+3455
1985.8480	208.7	0.168		1983.7129	354.2	0.331	
+17 4577	Cou 430	203991	21252+1828	1984.7014	353.4	0.336	
1982.7626	234.8	0.610		HR 8344	Cou 14	207652	21502+1718
1983.4314	234.8	0.598		1982.5057	26.8	0.248	
1984.7040	236.4	0.603		1982.5085	26.1	0.248	
+28 4085	Cou 940	204051	21253+2928	1982.7600	27.9	0.252	
1983.4259	277.4	0.330		1983.7129	36.8	0.287	
1983.4314	276.9	0.324		1984.7041	43.0	0.310	
1983.7101	276.0	0.328		1985.4902	46.8	0.322	
1984.7040	277.1	0.334		1985.8372	48.0	0.319	
1985.8480	275.3	0.327		ADS 15375	Ho 170	207782	21505+3925
				1983.7129	239.2	0.307	
				1984.7014	239.5	0.306	

TABLE IV. (continued)

ADS 15407	STF 2843 AB	208132-3	21516+6545	ADS 15988	STF 2912	213235	22299+0425
1983.4341	144.8	1.494	1.494	1984.7068		116.95	0.712
1983.7130	144.8	1.496	1.496	1985.8483		116.6	0.682
1984.7118	145.3	1.488	1.488	ADS 16011	Hu 981	213530	22306+6138
HR 8355	Fin 358	208008	21535-1019	1982.5059		222.9	0.315
1985.8535	94.2	0.091	0.091	1982.7654		222.6	0.313
ADS 15435	A 620	208341	21540+4403	1983.7157		223.4	0.309
1983.7129	278.2	0.336	0.336	+17 4759	Cou 234	213392	22307+1758
ADS 15478	A 622	208610	21572+1047	1984.7041		327.2	0.147
1983.7129	301.8	0.162	0.162	1985.4904		324.6	0.151
1984.7041	299.5	0.153	0.153	1985.8425		322.7	0.152
ADS 15499	Bu 275	208905	21573+6117	+53 2911	Kui 112 Aa	-----	22327+5347
1982.7599	172.1	0.404	0.404	1984.7069		225.0	0.557
1983.4341	172.3	0.398	0.398	ADS 16057	STF 2924 AB	213973	22329+6954
1983.7130	172.5	0.397	0.397	1982.7654		90.3	0.444
1983.7157	172.3	0.398	0.398	1983.7157		91.3	0.433
1985.8481	171.1	0.402	0.402	1984.0573		91.2	0.424
ADS 15530	Hu 774	209103	21598+4908	1985.8535		92.4	0.407
1983.7129	136.5	0.167	0.167	ADS 16072	Hu 983	214051	22339+6550
1984.7041	139.2	0.167	0.167	1985.8535		214.2	0.083
ADS 15549	A 1451	209260	22012+3915	ADS 16073	A 1468	213990	22342+5405
1985.4849	7.0	0.307	0.307	1983.7157		256.1	0.275
ADS 15578	Bu 694 AB	209515	22030+4439	1984.7042		256.7	0.273
1985.8481	4.9	0.933	0.933	1985.8481		254.6	0.276
ADS 15600	McA 69 Aa	209790	22037+6437	ADS 16098	A 1470	214222	22357+5312
1983.4341	213.9	0.041	0.041	1985.8481		290.9	0.117
ADS 15599	Bu 696 AB	209622	22045+1552	ADS 16111	Bu 1092 AB	214511	22361+7252
1984.7041	4.1	0.171	0.171	1983.7157		234.6	0.274
1985.8372	4.0	0.183	0.183	1984.7042		238.0	0.257
+81 0767	MLR 257	210979	22062+8240	1985.8536		239.3	0.239
1983.7157	244.1	0.206	0.206	+68 1319	CHARA 113	214606	22373+6913
+25 4677	Cou 537	-----	22077+2622	1983.7158		3.1	0.487
1984.7041	29.3	0.168	0.168	HR 8617	CHARA 114	214558	22383+4511
+22 4563	Cou 136	210444	22100+2308	1985.8535		119.9	0.114
1982.7654	44.5	0.398	0.398	ADS 16130	A 2695	214448	22384-0754
1984.7041	44.3	0.409	0.409	1984.7068		134.6	0.139
1985.4904	42.1	0.421	0.421	ADS 16138	Ho 295	214608	22387+4418
1985.8372	42.4	0.420	0.420	1982.5059		334.0	0.189
HR 8455	CHARA 106	210460	22103+1937	1982.7654		332.0	0.221
1985.8373	9.0	0.465	0.465	1983.7102		332.8	0.244
ADS 15746	Hu 695	-----	22129+5058	1984.0573		333.0	0.271
1983.7157	15.4	0.788	0.788	1984.7042		333.8	0.293
ADS 15756	Bu 991	211113	22136+5234	1985.4904		333.1	0.312
1983.7157	138.5	0.643	0.643	1985.8425		333.4	0.330
1984.7041	138.4	0.638	0.638	+80 0731	McA 72	215319	22394+8123
1985.8481	137.9	0.648	0.648	1983.7102		98.2	0.149
ADS 15758	McA 70 Ab	211073	22139+3944	1985.8373		94.9	0.151
1982.5059	7.8	0.463	0.463	ADS 16164	HO 188	214807	22402+3731
1985.4849	8.7	0.471	0.471	1984.7042		202.9	0.317
ADS 15758	Bnu Aa	211073	22139+3944	1985.8425		203.4	0.326
1982.5059	54.0	0.188	0.188	HR 8629	Kui 114	214810	22408-0333
+20 5138	Cou 139	-----	22236+2051	1982.7653		102.2	0.057
1985.4904	70.1	0.390	0.390	1983.7101		120.2	0.121
HR 8538	CHARA 108	212496	22236+5214	1984.7041		122.9	0.153
1984.7041	167.4	0.219	0.219	1985.8425		124.3	0.197
ADS 15896	STF 2900 AB	212395	22237+2051	ADS 16173	Ho 296 AB	214850	22408+1432
1985.8481	5.0	0.303	0.303	1982.5059		329.4	0.121
ADS 15902	Bu 172 AB	212404	22241-0451	1982.7654		308.7	0.106
1982.5060	258.4	0.162	0.162	1983.7157		213.0	0.075
1982.7653	253.7	0.169	0.169	1984.7041		115.3	0.141
1985.8425	212.2	0.122	0.122	1985.8481		92.8	0.248
+39 4837	Cou 1642	212900	22268+4034	ADS 16214	STT 476 AB	215242	22431+4709
1985.8425	76.1	0.159	0.159	1982.7654		307.0	0.489
ADS 15971	STF 2909 AB	213051-2	22288-0002	1983.7157		306.8	0.482
1982.5059	218.6	1.600	1.600	1984.0573		306.3	0.489
1982.5085	218.7	1.632	1.632	1984.7042		305.9	0.487
1982.7544	218.4	1.664	1.664	1985.8425		304.8	0.493
1982.7654	218.5	1.657	1.657	ADS 16214	Hu 91 BC	215242	22431+4709
1985.8483	212.3	1.728	1.728	1985.8425		56.4	0.034
HR 8572	McA 71	213310	22295+4743	ADS 16249	Hu 783	215590	22453+5128
1982.5059	43.3	0.132	0.132	1983.7102		181.8	0.193
1985.4849	46.3	0.119	0.119	1984.7042		182.3	0.195
				1985.8481		182.2	0.195

TABLE IV. (continued)

ADS 16314	Ho 482 AB	216285	22514+2624	ADS 16576	Ho 197 AB	218917	23115+3813
1982.7654	379.5	0.347		1983.7103		317.95	0.294
1983.7157	37.5	0.348		1984.7043		317.1	0.287
1984.7042	36.3	0.352		1985.8536		313.6	0.299
1985.4904	35.3	0.363		ADS 16591	A 2298	219018	23126+0242
1985.8427	34.7	0.361		1985.8536		99.8	0.136
HR 8704	McA 73	216494	22535-1137	ADS 16638	Bu 992	219633	23164+6408
1985.4849	280.6	0.076		1983.7102		43.2	0.258
1985.8536	279.4	0.079		1984.0573		44.0	0.263
+22 4742	Cou 240	216879	22564+2257	1984.7042		41.1	0.261
1982.7544	289.8	0.712		ADS 16650	Hu 400	219675	23176+1819
+23 4640	Cou 542 Aa	216963	22570+2441	1983.7103		128.0	0.345
1985.4904	142.8	0.119		ADS 16672	McA 74 Aa	219834	23191-1327
1985.8536	150.3	0.117		1982.5060		131.7	0.180
HR 8734	CHARA 116	217107	22583-0224	1982.7654		148.9	0.193
1982.5060	164.0	0.457		+41 4751	Cou 1646	-----	23198+4243
ADS 16417	STT 536 AB	217166	22585+0922	1983.7158		46.2	0.171
1982.5059	346.5	0.284		+27 4530	Cou 439	219963	23199+2845
1982.7654	346.3	0.320		1983.7103		209.1	0.216
1983.7101	347.0	0.313		1985.8427		214.4	0.218
1984.0573	346.9	0.311		+33 4690	Cou 742	219982	23199+3444
1984.7041	346.6	0.300		1983.7103		29.8	0.268
1985.8427	345.9	0.279		1984.7069		30.0	0.265
ADS 16430	A 192	-----	22589+4617	1985.8427		29.6	0.267
1983.7157	236.4	0.529		ADS 16708	Hu 295	220278	23226-1503
1984.7069	236.8	0.524		1982.5087		103.8	0.370
ADS 16428	STT 483	217232	22592+1144	1985.8428		108.6	0.303
1982.5085	303.3	0.552		ADS 16731	STT 495	220562	23241+5732
ADS 16469	STT 487	217992	23013+8046	1982.5060		120.1	0.275
1983.7102	198.9	0.227		1982.7655		119.0	0.289
1984.0573	201.6	0.221		1983.7158		119.6	0.292
1984.7042	197.1	0.242		1984.7043		119.4	0.295
HR 8762	o And Aa	217675	23019+4219	1985.8373		119.1	0.301
1984.7042	44.8	0.058		ADS 16748	Ho 489 AB	220723	23259+2742
HR 8762	o And AB	217675	23019+4219	1983.7103		229.3	0.533
1982.5059	358.6	0.280		1984.7069		228.9	0.530
1982.7654	358.1	0.291		1985.8427		227.5	0.533
1983.7102	357.1	0.275		+22 4835	Cou 338	220794	23266+2342
1984.7042	356.4	0.268		1985.8427		38.9	0.110
1985.4904	355.0	0.266		+41 4791	Cou 1847	221102	23288+4225
ADS 16457	A 194	217712	23020+4800	1983.7103		40.1	0.113
1983.7102	292.2	0.123		1984.7043		38.5	0.097
1984.7043	292.5	0.124		1985.8374		33.0	0.099
ADS 16467	Bu 1147 AB	217782	23026+4245	ADS 16800	Bu 1266 AB	221264	23305+3050
1982.5087	335.3	0.396		1982.5060		91.6	0.251
1982.7655	337.0	0.385		1982.7655		89.6	0.251
1983.7102	337.7	0.387		1983.7158		87.2	0.259
1984.0601	335.9	0.385		1984.7043		84.1	0.268
1984.7069	338.4	0.385		1984.7043		83.8	0.262
+63 1925	MLR 70	218179	23048+6405	1985.8427		80.3	0.263
1983.7102	252.4	0.563		ADS 16806	Bu 774	221333	23307+6420
ADS 16497	A 417 AB	218060	23052-0742	1983.7102		338.6	0.600
1985.8536	19.6	0.165		1984.7069		338.8	0.593
ADS 16505	A 196	218196	23055+4643	1985.8373		338.1	0.593
1984.7069	315.7	0.462		ADS 16819	Hu 298	221445	23322+0705
GL 888	Wor 13	-----	23060+4220	1983.7103		115.1	0.147
1983.7157	156.7	0.835		1985.8427		146.9	0.127
ADS 16518	Bu 180 AB	218439	23072+6049	+22 4860	Cou 144	-----	23339+2342
1983.7102	144.0	0.559		1985.8427		57.0	0.329
1984.7043	143.6	0.553		ADS 16836	Bu 720	221673	23340+3120
ADS 16530	Hu 994	218537	23078+6338	1982.5060		261.5	0.490
1982.5060	310.4	0.200		1982.5087		261.2	0.491
1982.7655	308.3	0.202		1983.7158		262.7	0.511
1983.7157	308.0	0.207		1984.7069		263.2	0.509
1984.0573	308.3	0.212		1985.8427		263.6	0.518
1984.7042	308.6	0.210		ADS 16858	Bu 721 AB	221925	23363-0707
HR 8817	RST 3320	218640	23099-2227	1983.7103		133.4	0.226
1982.7655	318.1	0.270		1985.8428		135.0	0.240
ADS 16561	Bu 385 AB	218767	23103+3228				
1983.7102	92.9	0.631					
1984.7069	92.0	0.632					

TABLE IV. (continued)

ADS 16877	STT 500 AB	222109	23375+4426	ADS 17050	STT 510 AB	223672	23516+4205
	1982.5087	358.93	0.487		1983.7103	305.8	0.533
	1982.7655	357.6	0.484		1984.0574	305.9	0.523
	1983.7158	358.4	0.474	ADS 17052	A 2700	223688	23517-0637
	1984.0574	358.7	0.476		1985.8427	114.6	0.134
	1984.0601	359.5	0.479	HR 9041	Fin 359	223825	23529-0313
	1984.7069	358.8	0.472		1982.5060	42.7	0.106
	1985.8374	358.5	0.479		1982.7655	44.3	0.089
ADS 16904	A 643	222326	23392+4543		1983.7103	37.0	0.084
	1983.7103	165.2	0.226		1985.4930	14.7	0.069
	1985.8373	156.5	0.220		1985.8428	10.8	0.059
+45 4301	MLR 4	222516	23412+4613	+42 4792	Cou 1498	224167	23557+4318
	1983.7103	277.8	0.159		1983.7103	39.9	0.164
	1984.0574	278.2	0.156		1985.8428	39.0	0.164
	1985.8373	298.4	0.132	ADS 17104	Hu 500	224219	23561+2327
HR 9003	McA 75 Aab	223047	23460+4625		1985.8428	87.7	0.165
	1982.5060	107.3	0.279	ADS 17111	A 2100	224315	23568+0443
	1982.7655	104.1	0.291		1983.7103	179.1	0.181
	1983.7103	104.5	0.284		1985.8428	163.7	0.146
	1985.8373	103.1	0.295	ADS 17118	A 900	224395	23574+7251
+35 5106	Cou 944	-----	23485+3608		1983.7104	127.1	0.329
	1985.8536	98.1	0.187		1985.8429	127.2	0.337
ADS 17019	B 2547 AB	223331	23485+3617	-14 6588	RST 4136 AB	224512	23586-1408
	1983.7103	358.0	0.247		1983.7158	29.6	0.149
	1985.8536	358.8	0.237		1985.8428	24.5	0.172
ADS 17020	STT 507 AB	223358	23486+6453	ADS 17151	A 1498	224646-7	23594+5441
	1982.5085	308.3	0.702		1983.7104	84.5	0.386
	1984.0574	307.2	0.700		1984.0574	85.1	0.389
	1984.7069	306.6	0.709		1985.8428	84.3	0.389
+18 5223	Cou 343	223402	23492+1915				
	1983.7103	115.3	0.211				
	1985.8427	117.0	0.206				
ADS 17030	A 424	223486	23498+2740				
	1982.7655	103.7	0.170				
	1983.7103	106.6	0.173				
	1984.0574	108.9	0.166				
	1985.8427	110.3	0.171				

Notes to TABLE IV

The brief notes given below are presented primarily in connection with the newly resolved stars. The "binary types" indicated in Tables II and III are from a variety of sources, including the *Bright Star Catalog* (Hoffleit 1982), the catalog of spectroscopic binary star orbits of Batten *et al.* (1978), the catalog of composite spectrum stars compiled by Hynek (1938), and the catalog of lunar-occultation binaries of Evans (1983). Additional occultation binary candidates were added to the observing program from lists published by the International Occultation Timing Association (IOTA) and from the list of stars exhibiting anomalous occultations published by Appleby (1980).

HD 761=CHARA 1: This pair is confirmed by Tokovinin (1985) and is steadily closing in separation.

HD 8272=ADS 1105: STF 115 AB, first measured by F. W. Struve in 1836 at an angular separation $0''.68$, had opened to $1''.2$ by 1910, then steadily closed to $0''.35$ at the time of the first speckle measurement in 1978 (McAlister and Hartkopf 1984). Based on a preliminary visual/speckle orbit, the pair reached an apparent minimum separation of $0''.01$ in the spring of 1984.

HD 11031=CHARA 4: Although this new component is indicated as Aa, we have not yet firmly established whether it is associated with the A or B component of the 1.9 system comprising ADS 1438.

HD 13520=CHARA 5: The five negative results obtained during 1976-1980 (McAlister and Hartkopf 1984) are apparently due to a large magnitude difference.

HD 15089=CHARA 6: Heintz (1962) found a submotion to the visual orbit of ADS 1860 AB ($P = 840$ yr, $a = 2''.27$) with a period of 52 yr and an amplitude of $0''.11$. The component reported here may coincide with Heintz's astrometric component.

HD 21242=CHARA 9: This is UX Ari, an RS CVn type binary that is not eclipsing. The spectrum shows three components (Fekel, private communication), two of which are identified with the 6.44 day system described by Carlos and Popper (1971) while the third is possibly the new component reported here.

Ross 29=CHARA 15: Van Maanen (1941) suspected this star to be a binary, but these are the first measurements of a companion.

HD 58728=McA 30: Fekel (private communication) has detected this system as a third component in the spectrum and makes a preliminary estimate of the period of 760 days.

HD 106760=CHARA 37: A spectroscopic orbit with a period of 1300 days was determined by Christie (1936). This star has been observed by speckle interferometry on ten occasions during 1976-1981 at which no companion was seen. A large or variable magnitude difference may be present.

HD 114378-9=ADS 8804: Nearly 40 speckle measurements have now been published for STF 1728 AB. A preliminary orbit for this nearly edge-on pair, based solely on speckle data, indicates that one of the F5 V stars may partially eclipse the other in early 1990. Observations over the next few years will permit a more accurate statement concerning this possibility.

HD 157482=McA 47: Fekel (private communication) has an unpublished spectroscopic orbit for this system with a period of 5.5 yr.

HD 173495=ADS 11640: This is a quadruple system consisting of two close ($0''.14$) pairs of similar position angle discovered by Finsen with his eyepiece interferometer. Our 1982 speckle observations were made at a lower magnification and included all four stars in the field. The resulting overlapping autocorrelation peaks precluded us from measuring the Aab and Bab pairs directly but did permit the measurement of the AB; Aa-Bb and Ab-Ba configurations. In later observations made at a higher magnification, we observed the A and B components separately enabling the measurement of Aab and Bab but not AB.

HD 176155=CHARA 82: Abt (1959) reported a spectroscopic orbit with a period of 1435 days for the primary component of the visual binary ADS 11884. The primary is a Cepheid variable with a period of 4.47 days. Continued observation of this system interferometrically and spectroscopically could permit the determination of the mass and distance for a Cepheid variable star.

HD 192806=McA 60 Aa,B+CHARA 94 Aa: Speckle interferometry has now found two components to HR 7744 = 23 Vul.

HD 194215=CHARA 97: The correspondence of this newly resolved component with the 377.6 day spectroscopic system reported by Bopp *et al.* (1970) can only be established by further observations.

HD 206155=CHARA 105: Lacy and Popper (1984) discovered a previously unknown companion to the eclipsing binary EE Peg through its effects on radial velocity and times of primary eclipse. They find the third component to have a period of 1464 days and a mass ratio $M_{A+B}/M_C \approx 5-12$. Their component would be expected to exhibit a separation from the primary of approximately $0''.03$, a value just resolvable by speckle interferometry. It thus seems likely that the object seen in our speckle observations is yet another long-period member of this system.

HD 221264=ADS 16800: Fekel (private communication) reports that he has now detected four components in the spectrum of this star.

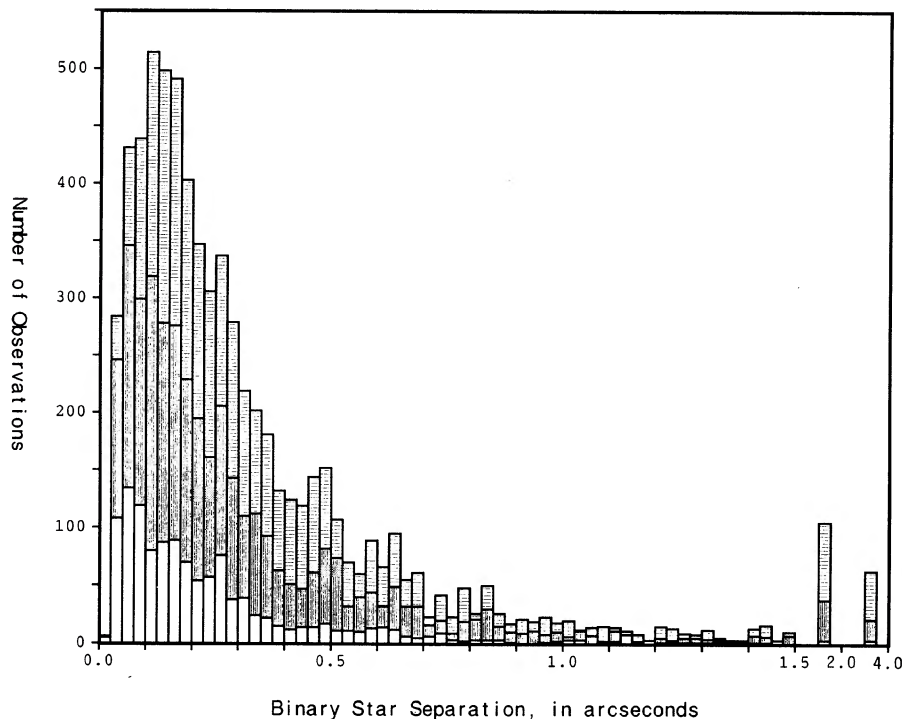


FIG. 5. The distribution of measured angular separations is shown for all modern interferometric observations of binary stars that are known to and catalogued by the authors. For the 6910 measurements represented here, 2908 are from our ICCD camera (light shading), 2780 are from our original photographic speckle program (dark shading), and 1222 measurements have been accumulated by other programs of binary star interferometry (unshaded). The overall mean angular separation in the collected data is $0''.35$, while 17% of the measurements are for binary stars with separations less than or equal to $0''.10$.

ate quadrants for known visual binaries, but we arbitrarily adopt $\theta < 180^\circ$ for newly resolved pairs.

The 2780 measurements of 1012 systems in Table IV combine with the same number of measurements published from our photographic speckle program and the 128 measurements from Paper I to give a total of 5688 speckle measurements of binary stars resulting from the GSU program. At the time of submission of this paper, we are aware of another 1222 measurements from other modern interferometric programs giving a total of 6910 interferometric observations of binary stars.

The mean angular separation of the observations in Table IV is $0''.409$. This compares with a mean value of $0''.333$ for our earlier photographic results. The larger mean is at least partly due to the exclusive use of the microscope objective giving a scale of 0.0161 arcsec per pixel during our first few observing runs with the new camera at the 4 m telescope. Such a scale gives only slightly more than 2 pixels per Airy disk, a sampling interval too small to reach the diffraction limit. This approach was corrected for later observations, and we now use the $10\times$ microscope objective only when seeing conditions are very poor or when binaries with angular separations of the order of 1 arcsec or wider are being observed. In Fig. 5 we show the distribution of observed angular separations for the data from this paper and Paper I, from the GSU photographic speckle series, and from all other contributors known to us. The mean angular separation in these collected measurements is $0''.349$, and 17% of the results are for angular separations no larger than $0''.10$.

Many people have made invaluable contributions to this program, and we wish to acknowledge their efforts here. The detailed design and construction of the new speckle camera was carried out by William G. Robinson, and the camera's

reliability and efficiency are testimony to a superb job. The vector autocorrelator, designed and constructed by Peter Vokac, has made it possible to reduce efficiently nearly one terabyte of data. The cooperation and enthusiasm of the KPNO LTOs have been particularly important to the efficient use of telescope time, and we thank Hal Halbedel, Barbara Schaefer, Dean Ketelson, George Will, Bret Goodrich, Annie Shaw-Hansen, Randy Bergeron, and Dean Hudek for keeping their good spirits during many nights of 3 min re-pointing cycles. We have also benefitted greatly from the granting of long-term observer status at the KPNO 4 m telescope during the course of these observations and express our appreciation to several understanding TACs who continued to grant time while we were developing the reduction and analysis procedures. Assistance in gathering data at the telescope or in handling the data in the laboratory has been given by Barbara Gaston, Dick Miller, Phillip Lu, Ed Dombrowski, Mike Carini, and Alex Rosen. Assistance in computer matters at GSU has been given by Paul Schmidtke, Mike Lucas, Duke Windsor, and Steve Lasseter. We are grateful to Wayne H. Warren, Jr., of the Astronomical Data Center at the NASA Goddard Space Flight Center for providing information incorporated in object identification. We thank Frank Fekel for his many suggested candidate stars and for his comments on this paper. Occultation binary candidates have been kindly recommended by Nat White and David Dunham. We thank Art Hoag for making time available on the Lowell 24 in. refractor, and Ralph Nye for quickly preparing a mounting bracket so that our camera could be used experimentally on that telescope. Finally, we are especially indebted to Charles Worley, who, in addition to providing valuable advice over the years, proofread our entire list of measures and pointed out a number of identification errors. Our new measurements are already incorporated in the Washington Double Stars Catalog maintained by Mr.

Worley at the U.S. Naval Observatory. The ICCD speckle camera system was funded by the National Science Foundation through grant AST-79-24576, while the continuing research effort has been supported by NSF grants AST 80-15781 and AST 83-14148. The image-processing and computer system was purchased through a DOD-University

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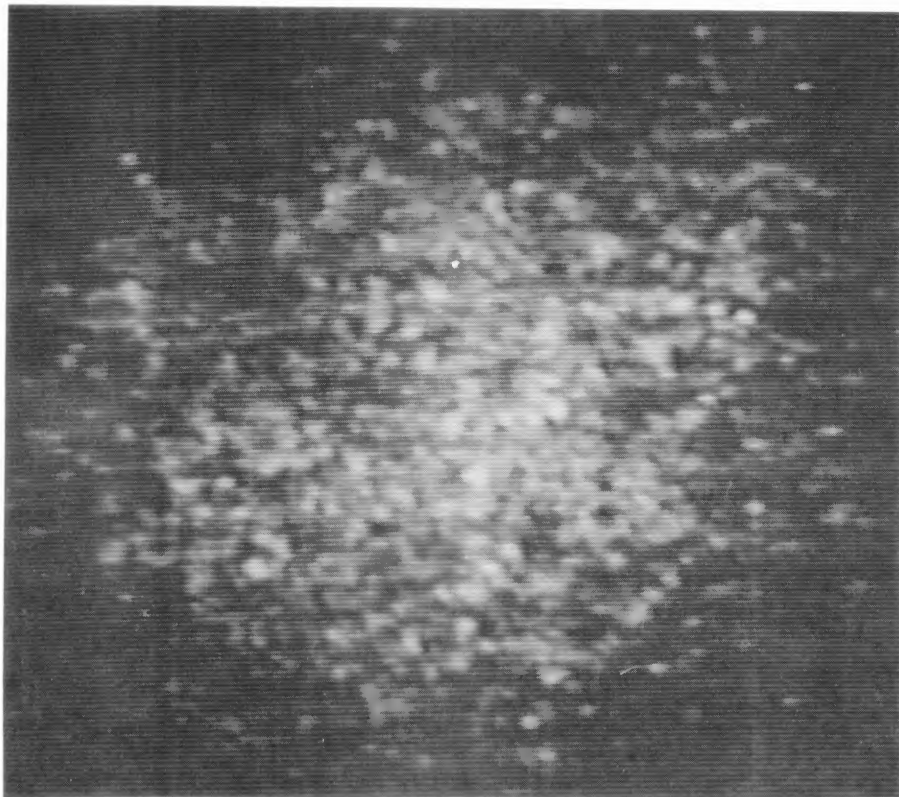
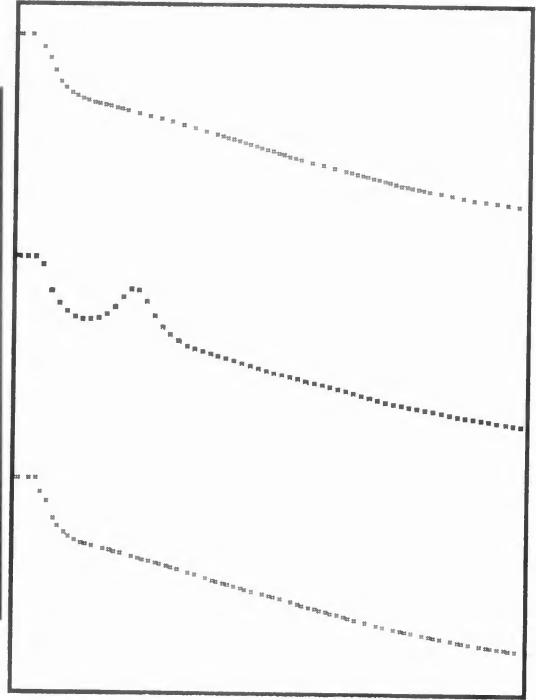
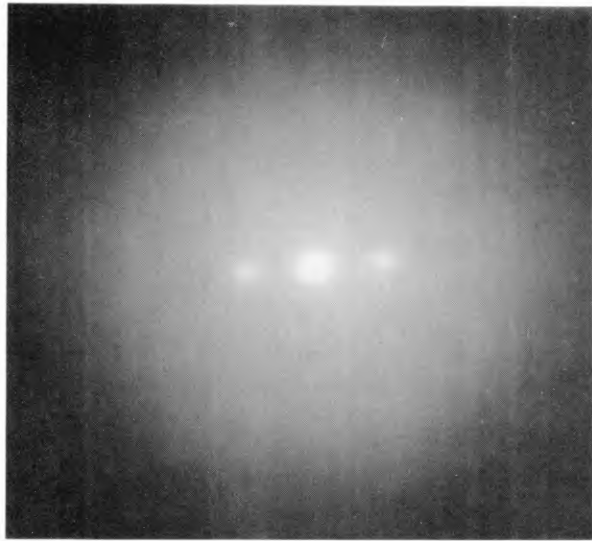


FIG. 2. A single speckle frame of the visual binary stars ADS 7158 (κ UMa) obtained at the 4 m KPNO telescope with the GSU ICCD speckle camera on 1985.835 is shown. The field of view is approximately 2.0 arcsec square.

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a



b

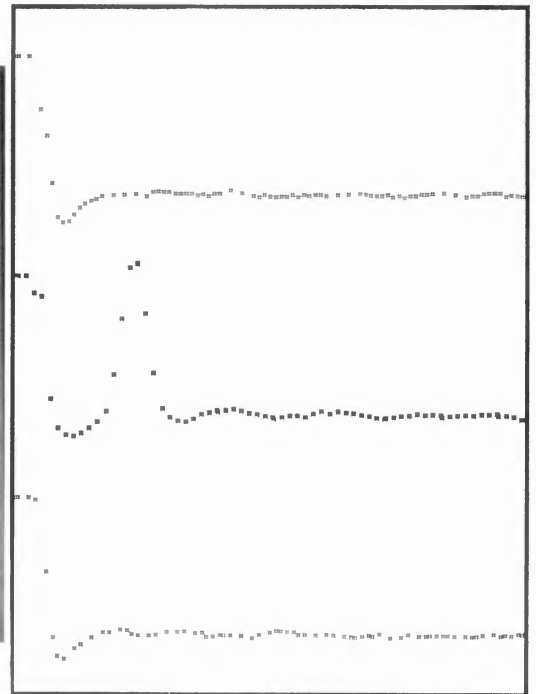
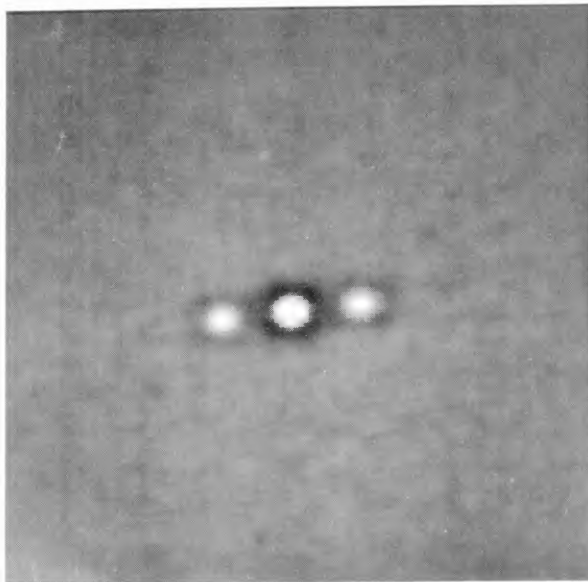


FIG. 3. (a) The composite vector autocorrelogram of approximately 1800 speckle frames of ADS 7158 shows the characteristic peaks indicative of duplicity superimposed upon a seeing-dominated background. (b) A background-subtracted version of the same autocorrelogram shows the resulting high-contrast double star peaks on either side of the strong zeroth spatial component.

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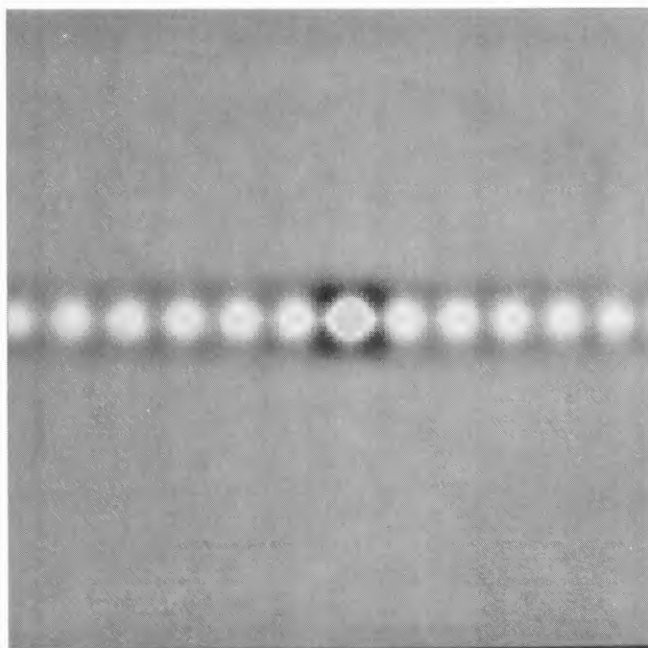


FIG. 4. A vector autocorrelogram of calibration data obtained on 1984.387 for the single star κ CrB observed through a double-slit aperture mask shows the high-signal-to-noise row of peaks used to determine the image plane scale and pole orientation.

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