has been constructed, following Lynden-Bell, D., Cannon, R. D., and Godwin, P. J. (1983, M.N.R.A.S., 204, 87p). Velocities with respect to the galactic rest frame of two systems, Eridanus and Palomar 3, are both more negative than -100 km/s, even with generous allowance for systematic errors. This is large enough to suggest a total mass for the Galaxy of 10^{12} $M_{\odot}$. A similar mass is inferred from the average of the cluster distance times velocity squared.

36.07
A Southern Survey for Extremely Metal Poor Stars

T. C. Beers (Caltech), S.A. Shectman, and G.W. Preston (MWLCO)

We present the first results from the "Preston-Shectman" survey of low metallicity stars, initiated in 1978. The primary goal of this survey is to obtain a kinematically unbiased sample of extremely metal deficient stars ([Fe/H] $\lesssim$ -2.0) from which the metallicity distribution function might be deduced. A secondary goal is to study the kinematics of the metal poor stellar population.

The initial objective prism survey (CTIO 0.6m) resulted in a candidate list of about 1800 stars with a weak or absent CaII-K line. We have obtained nearly 1200 Reticon spectra of these low metallicity candidates (1Å res., $\lambda\lambda$3700-4550 Å). Radial velocities and equivalent widths of prominent spectral features have been measured for ~ 500 of these stars to date. UBV photometry of several hundred candidates has also been obtained. A metallicity calibration sequence has been developed, based on the equivalent widths of the CaII-K feature and the Balmer lines in metal poor globular clusters. From this calibration, about 30 to 40 percent of the metal poor candidates are known to have [Fe/H] $\lesssim$ -2.0.

A preliminary analysis of the kinematics of the 129 stars with [Fe/H] $\lesssim$ -2.0 indicates that the line-of-sight velocity dispersion in the direction of the south galactic pole is on order 60 km/s, a factor of two less than that at lower galactic latitudes.

36.08
Eight-Color Observations of Suspected M Supergiants

D. J. MacConnell (Mich. St. U.), R. F. Wing (Ohio St. U.)

Observations in the Wing 8-color system were made at CTIO in March 1984 of 39 stars suspected to be M supergiants on the basis of their appearance on very low-dispersion, near-infrared plates. They are among several hundred noted in a Schmidt survey of the southern galactic plane which one of us (DJM) is carrying out. The photometry indicates that at least half of those measured are indeed new K-M supergiants; some of them have between 4 and 6 mag of visual absorption and may be as faint as V ~ 15. Further 8-color and initial spectroscopic observations of these and other candidates stars are planned.

Session 37: Variable Stars I
2:30–3:50 (Empire Central, Holiday Inn)

37.01
The Feinheit Method: A Phase-Independent Scheme for Calibrating the Period-Luminosity Relation of Classical Cepheids.

B.F. Madore (Cal Tech/ D.D.O.)

Motivated by recent infrared observations of Cepheids, a parallel technique for a phase-independent calibration of the Period-Luminosity relation has been developed for optical (B,V) observations. By noting that for Cepheids, the periodic variations in color and luminosity are strongly correlated, it is shown that temperature/surface brightness variations can be made to cancel at any random phase point thereby leaving only a small residual radius effect, which is equivalent to that seen in the long-wavelength infrared observations. Additional advantages of the so-called phase-independent Feinheit Method of calibration are that the correct combination of color and magnitude also largely cancel reddening and is in the correct sense to minimize atmospheric differences between Cepheids. Compared to random-phase B observations alone, Feinheit magnitudes give a three-fold decrease in the intrinsic width of the Period-Luminosity relation, and simultaneously compensate for other systematic effects which might otherwise compromise the application of Cepheids to distance determinations.

37.02
Fourier Decompositions for Short-Period Type II Cepheids

N. R. Simon (U. Nebr.-Lincoln)

Fourier decompositions are performed for a sample of short-period Type II Cepheids with well-defined light curves. The Fourier quantities ϕ_{21} and R_{21} show no evidence of a progression with period such as characterizes the classical Population I Cepheids along the Hertzsprung sequence. This result could reflect the finding of Hodson, Cox and King that lines of constant period and period ratio do not coincide for Type II models. In that case, one would expect some extreme values of ϕ_{21} among the Type II sample (even if there were not a well-defined variation with period) whereas, in actuality, the spread in ϕ_{21} among the stars is quite small. On the other hand, the variation of the quantity ϕ_{31} from star to star is considerably larger. We attempt to use this variation to test the classification scheme proposed by Diethelm, but obtain a result which is not conclusive. Finally we discuss the amplitude-period diagram for these stars and compare this with the results of hydrodynamic calculations.

37.03
The Maia Variables - A True Class of Variable Stars?

B. J. McNamara (N M State U)

Four stars, including Maia, located within the Maia instability strip are investigated for photometric variability. The data consist of over 1600 differential Stromgren y magnitudes collected during 5 months of observation. No evidence is found for variability over the 0.1 - 0.3 d period range suggested for these stars. Two stars, Merope and Atlas do seem to show variability but the length of their periods imply a closer relation to the newly discovered 53 Per stars. It is suggested that the Maia stars do not exist as a separate class of intrinsic variables but are an extension of the 53 Per phenomenon to cooler temperatures.

37.04
Spectroscopy of the Winds from Hubble-Sandage Stars in M31 and M33

S.J. Kenyon (CfA), J.S. Gallagher (KPNO/NOAO)

We have secured intermediate resolution (1 A) spectra of five Hubble-Sandage (H-S) stars in M31 (AE And, AF And, and variable A-1) and M33 (variables B and C). P Cygni profiles are present on all strong permitted lines, indicating photospheric outflow velocities of ≈ 100-300 km/sec and mass