

PHOTOELECTRIC PHOTOMETRY OPPORTUNITIES NOVEMBER - JANUARY

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The table below lists asteroids which come to opposition during the months of November through January that represent useful targets for photoelectric photometry observations. Observations are needed because the asteroid has either an unknown or ambiguous rotational period or because the asteroid will be observable at a very low phase angle. The table also includes asteroids which are candidates for pole determinations (see the article by Di Martino and Zappalà in issue 12, No. 1), are targets for radar observations (see the article by Ostro in MPB 10, No. 4), or are subjects for shape modelling (see the article by Davis and Binzel in MPB 14, No. 3). The table gives (in order of opposition dates) the asteroid number and name, opposition date, opposition V magnitude, the rotational period (in hours), the estimated lightcurve amplitude (in magnitudes), and the designation PER if observations are needed to determine the rotational period. AMB implies that previous period determinations have given ambiguous results and these alternate periods are listed in the table. PHA indicates observations of the phase curve are desired because the asteroid will be at an unusually low phase angle, POL indicates the asteroid is a pole position candidate, RAD indicates the asteroid is a planned radar target, and MOD denotes an asteroid at a critical longitude for shape modelling. Question marks are used to denote uncertain or unknown values. An outline of recommended observing procedures is given in MPB 11, No. 1, page 7. Also recommended is the book *Solar System Photometry Handbook* (see the review by Tholen in MPB 11, No. 4). Ephemerides for all of the asteroids in the table are included in this issue. Finder charts for some of these asteroids may appear in the *Minor Planet Observer*. For information on this publication, contact: Brian D. Warner, Box 818, Florissant, CO 80816.

Asteroid	Opp'n Date	Opp'n V Mag	Per	Amp	
10 Hygiea	Nov 14	10.2	17.50	0.1	PHA
22 Kalliope	Dec 6	9.8	4.148	0.2	PHA
50 Virginia	Dec 5	11.4	>24?	0.2?	PER
704 Interamnia	Dec 29	9.9	8.727	0.1	PHA

Photoelectric Photometry Opportunities

			R.A. (1950)		DEC.	MAG	PHASE	
DATE			HR	MIN	DEG	MIN	V	ANGLE
Minor Planet			10 Hygiea					
1991 Oct	6	3	38.41	+23	42.7	11.00	11.9	
	16	3	34.00	+23	32.9	10.83	9.5	
	26	3	27.80	+23	14.1	10.65	6.7	
Nov	5	3	20.29	+22	46.9	10.46	3.6	
	15	3	12.14	+22	12.7	10.28	1.2	
Dec	25	3	4.14	+21	34.3	10.46	3.5	
	5	2	57.02	+20	55.2	10.66	6.6	
	15	2	51.41	+20	19.2	10.85	9.4	
	25	2	47.68	+19	49.5	11.02	11.8	

Minor Planet 22 Kalliope						
1991 Oct	26	5	20.88	+22 37.0	10.76	16.7
	Nov 5	5	17.64	+23 23.2	10.56	13.7
	15	5	11.46	+24 10.3	10.34	10.0
Dec	25	5	2.80	+24 55.9	10.12	5.8
	5	4	52.54	+25 37.2	9.87	1.6
	15	4	41.93	+26 12.3	10.02	3.8
1992 Jan	25	4	32.29	+26 41.1	10.26	8.1
	4	4	24.75	+27 5.1	10.49	12.0
	14	4	20.03	+27 26.8	10.71	15.2

Minor Planet 50 Virginia						
1991 Oct	26	5	11.91	+18 41.7	12.17	21.2
	Nov 5	5	9.31	+18 16.7	11.97	16.9
	15	5	3.16	+17 50.7	11.76	11.8
Dec	25	4	54.37	+17 25.6	11.54	6.4
	5	4	44.36	+17 4.1	11.38	2.4
	15	4	34.80	+16 49.1	11.69	6.1
1992 Jan	25	4	27.14	+16 43.0	12.05	10.9
	4	4	22.34	+16 47.1	12.38	15.2
	14	4	20.79	+17 1.2	12.69	18.6

Minor Planet 704 Interamnia						
1991 Nov	15	7	2.41	+27 44.4	11.00	15.8
	25	6	58.64	+27 14.2	10.81	13.1
	Dec 5	6	52.17	+26 41.2	10.60	9.8
Dec	15	6	43.51	+26 4.3	10.36	6.0
	25	6	33.53	+25 22.6	10.08	2.0
1992 Jan	4	6	23.32	+24 36.8	10.14	2.4
	14	6	13.98	+23 48.7	10.47	6.3
	24	6	6.45	+23 1.0	10.74	9.8
Feb	3	6	1.30	+22 16.2	10.99	12.8