

THE ASTRONOMER Electronic Circular No 435 1990 JULY 31 20.00 UT
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1990 DL

E. Helin reports her discovery of a minor planet with near-opposition direct motion. The following positions were measured by B. Roman from exposures by Helin, Roman, K. Lawrence and J. Michaud with the 0.46-m Schmidt telescope at Palomar:

1990 UT	R.A. (1950)		Decl.	Mag.	
July 22.42882	21 28	23.85	+ 3 30 06.1	16.0	
22.45764	21 28	24.84	+ 3 29 33.3		
23.36840	21 29	02.80	+ 3 11 08.8		
23.39219	21 29	03.61	+ 3 10 39.0		

The orbit is understandably extremely uncertain:

T = 1990 Oct. 16.83 ET	Peri. = 247.72	
e = 0.5009	Node = 140.65	1950.0
q = 0.9831 AU	Incl. = 20.13	
a = 1.9696 AU	n = 0.35657	P = 2.76 years

1990 ET	R.A. (1950)		Decl.	Delta	r	V
July 28	21 32.26	+ 1 15.4		0.363	1.351	14.8
Aug. 2	21 35.98	- 1 41.2				
7	21 40.27	- 5 48.4		0.275	1.282	13.8
12	21 45.60	-11 29.6				
17	21 52.72	-19 11.4		0.205	1.216	12.8

PERIODIC COMET HONDA-MRKOS-PAJDUSAKOVA (1990F)

Further total visual magnitude estimates by A. Pearce, Scarborough, W.A. (0.41-m reflector): July 25.88 UT, 12.4, 27.88, 12.2. (IAUC 5063)

1990 OS

E. Helin reports her discovery of a fast-moving minor planet on a July 21 film obtained by B. Roman, K. Lawrence, J. Michaud and herself with the 0.46-m Schmidt telescope at Palomar. The object was confirmed on a July 26 exposure by H. E. Holt and D. H. Levy with the same telescope. The following measurements are by Roman and Lawrence:

1990 UT	R.A. (1950)		Decl.	Mag.	
July 21.41111	21 17	55.70	-24 22 57.9	16.0	
21.43889	21 18	03.75	-24 22 49.1		
26.35677	21 53	45.52	-23 33 57.1	16.3	
26.38785	21 54	02.25	-23 33 23.3		

There is noticeable apparent acceleration, and the following orbital elements, although very uncertain, indicate a close approach to the earth. Further positions are urgently required.

T = 1990 Sept. 18.939 ET	Peri. = 27.648	
e = 0.40707	Node = 341.819	1950.0
q = 0.89899 AU	Incl. = 1.087	
a = 1.51620 AU	n = 0.527924	P = 1.87 years

1990 ET	R.A. (1950)		Decl.	Delta	r	V
July 28	22 11.66	-22 54.1		0.064	1.074	15.2
29	22 24.83	-22 20.6				
30	22 40.14	-21 36.0		0.054	1.063	14.9
31	22 57.97	-20 36.4				
Aug. 1	23 18.73	-19 17.1		0.046	1.052	14.7
2	23 42.79	-17 32.0				
3	0 10.35	-15 15.1		0.039	1.041	14.6
4	0 41.29	-12 22.4				
5	1 14.97	- 8 54.5		0.035	1.031	14.8
6	1 50.22	- 5 00.3				
7	2 25.48	- 0 56.0		0.034	1.020	15.2

(IAUC 5064)

1990 MB

Several contributors, initially E. Bowell, Lowell Observatory, have remarked on the possibility that this object might be a "Mars Trojan"---the first of its kind. Further astrometric and physical observations of it would therefore be particularly desirable. The orbit below, from MPC 16700, is still based on only a 24-day arc. Numerical integration of this orbit over an interval of 60 000 days shows the distance between 1990 MB and Mars to vary over a range of 0.3 AU during each revolution period P. There is essentially a secular (long period?) trend to the distances, however, diminishing from 1.9-2.2 AU around 1860 to 1.2-1.5 AU around 2020. Minimum distances from the earth, Venus and Jupiter are rather consistently 0.5, 0.8 and 3.5 AU, respectively.

T = 1990 Oct. 29.2403 ET Peri. = 95.4805
e = 0.065461 Node = 244.4378 1950.0
q = 1.422997 AU Incl. = 20.2267
a = 1.522672 AU n = 0.5245594 P = 1.879 years

1990 ET	R.A. (1950)	Decl.	Delta	r	V
July 28	16 35.65	+ 7 08.4	0.681	1.461	17.3
Aug. 7	16 42.55	+ 7 23.9			
17	16 53.14	+ 7 09.2	0.802	1.447	17.8
27	17 06.93	+ 6 34.6			
Sept. 6	17 23.50	+ 5 48.6	0.921	1.436	18.1
16	17 42.43	+ 4 57.5			
26	18 03.50	+ 4 06.0	1.034	1.428	18.4
Oct. 6	18 26.44	+ 3 18.8			
16	18 51.00	+ 2 38.9	1.144	1.424	18.6
26	19 16.99	+ 2 09.5			
Nov. 5	19 44.18	+ 1 52.6	1.253	1.423	18.7
15	20 12.32	+ 1 49.7			
25	20 41.21	+ 2 01.7	1.367	1.426	18.9

COMET LEVY (1990c)

Total visual magnitudes: July 24.90 UT, 6.5 (A. Pearce, Scarborough, Western Australia, 20 x 80 binoculars); 25.30, 6.8 (J. V. Scotti, Tucson, AZ, 10 x 50 binoculars); 26.30, 6.6 (J. E. Bortle, Stormville, NY, 10 x 50 binoculars); 27.31, 6.3 (Scotti); 27.85, 6.3 (Pearce; 0.75-deg tail in p.a. 231 deg).

IAUC 5067

D.G. Buczynski