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IAU Minor Planet Center

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M.P.E.C. 2011-N02 Issued 2011 July 1, 13:40 UT

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2011 MM4

Observations:

K11M04M*	C2011	06	24.37087	17	19	32.671+51	07	33.97	21.1	rLEN002F51
K11M04M	C2011	06	24.37147	17	19	32.643+51	07	33.81	21.0	rLEN002F51
K11M04M	C2011	06	24.38094	17	19	32.353+51	07	34.15	21.3	rLEN002F51
K11M04M	C2011	06	24.38154	17	19	32.325+51	07	34.42	21.2	rLEN002F51
K11M04M	C2011	06	24.39220	17	19	32.011+51	07	34.36	20.8	iLEN002F51
K11M04M	C2011	06	24.39286	17	19	31.995+51	07	34.46	20.8	iLEN002F51
K11M04M	C2011	06	24.40283	17	19	31.681+51	07	34.75	20.9	iLEN002F51
K11M04M	C2011	06	24.40349	17	19	31.667+51	07	34.82	20.8	iLEN002F51
K11M04M	C2011	06	25.23046	17	19	06.94	+51	07 54.2	22.2	cEN002926
K11M04M	C2011	06	25.23351	17	19	06.88	+51	07 54.4		cEN002926
K11M04M	C2011	06	25.23654	17	19	06.76	+51	07 54.5		cEN002926
K11M04M	C2011	06	25.23957	17	19	06.68	+51	07 54.0		cEN002926
K11M04M	C2011	06	25.24262	17	19	06.61	+51	07 53.9		cEN002926
K11M04M	C2011	06	25.24566	17	19	06.51	+51	07 54.5		cEN002926
K11M04M	C2011	06	25.24870	17	19	06.35	+51	07 55.0		cEN002926
K11M04M	C2011	06	25.25176	17	19	06.24	+51	07 54.4		cEN002926
K11M04M	C2011	06	25.25478	17	19	06.07	+51	07 54.0		cEN002926
K11M04M	C2011	06	25.25784	17	19	06.08	+51	07 54.0		cEN002926
K11M04M	KC2011	06	25.26264517	19	05.89	+51	07 54.3		21.5	VtEN002H21
K11M04M	KC2011	06	25.27521617	19	05.47	+51	07 54.3		21.3	VtEN002H21
K11M04M	KC2011	06	25.28781917	19	05.08	+51	07 54.8		21.4	VtEN002H21
K11M04M	KC2011	06	25.30822017	19	04.50	+51	07 55.3		20.7	VtEN002H21
K11M04M	C2011	06	25.35824	17	19	02.99	+51	07 56.3	20.9	RoEN002H01
K11M04M	C2011	06	25.36480	17	19	02.79	+51	07 56.4	20.6	RoEN002H01
K11M04M	C2011	06	25.37203	17	19	02.58	+51	07 56.6	20.7	RoEN002H01
K11M04M	C2011	06	25.38284	17	19	02.24	+51	07 56.7	20.5	RoEN002H01
K11M04M	C2011	06	26.29333	17	18	35.05	+51	08 13.4	20.8	RoEN002H01
K11M04M	C2011	06	26.29970	17	18	34.85	+51	08 13.4	20.5	RoEN002H01
K11M04M	C2011	06	26.30752	17	18	34.62	+51	08 13.6	20.7	RoEN002H01
K11M04M	C2011	06	26.31511	17	18	34.38	+51	08 13.7	20.5	RoEN002H01
K11M04M	%C2011	06	26.56109	17	18	27.100+51	08	16.73	20.7	RoEN002F65
K11M04M	%C2011	06	26.56385	17	18	26.950+51	08	16.64	20.8	RoEN002F65
K11M04M	%C2011	06	26.56662	17	18	26.914+51	08	16.80	20.3	RoEN002F65
K11M04M	KC2011	06	27.97620	17	17	44.97	+51	08 32.8	20.8	uEN002B01

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K11M04M	KC2011	06	27.98261	17	17	44.78	+51	08	34.1	20.7	uEN002B01
K11M04M	KC2011	06	27.98902	17	17	44.56	+51	08	32.8	21.0	uEN002B01
K11M04M	KC2011	06	27.99544	17	17	44.42	+51	08	33.0	21.6	uEN002B01
K11M04M	KC2011	06	28.00185	17	17	44.29	+51	08	33.9	21.3	uEN002B01
K11M04M	KC2011	06	28.00826	17	17	44.12	+51	08	33.1		uEN002B01
K11M04M	KC2011	06	28.23969417	17	17	37.20	+51	08	35.2	21.3	VtEN002H21
K11M04M	KC2011	06	28.25023317	17	17	36.89	+51	08	35.5	21.3	VtEN002H21
K11M04M	KC2011	06	28.26049017	17	17	36.52	+51	08	35.6	20.5	RuEN002H36
K11M04M	KC2011	06	28.26076717	17	17	36.59	+51	08	35.6	21.5	VtEN002H21
K11M04M	KC2011	06	28.27240517	17	17	36.23	+51	08	35.7	20.7	RuEN002H36
K11M04M	KC2011	06	28.29626117	17	17	35.52	+51	08	35.8	20.7	RuEN002H36
K11M04M	2C2011	06	28.37862717	17	17	33.128	+51	08	36.75	20.2	RoEN002568
K11M04M	2C2011	06	28.38092417	17	17	33.058	+51	08	36.72	20.2	RoEN002568
K11M04M	2C2011	06	28.38322217	17	17	32.987	+51	08	36.73	20.3	RoEN002568
K11M04M	2C2011	06	28.38552317	17	17	32.919	+51	08	36.77	20.3	RoEN002568
K11M04M	2C2011	06	28.38781817	17	17	32.850	+51	08	36.79	20.1	RoEN002568
K11M04M	KC2011	06	29.25072217	17	17	07.43	+51	08	40.0	20.7	RuEN002H36
K11M04M	KC2011	06	29.26197217	17	17	07.06	+51	08	39.8	20.8	RuEN002H36
K11M04M	KC2011	06	29.97409	17	16	46.17	+51	08	40.6		uEN002J95
K11M04M	KC2011	06	30.00005	17	16	45.37	+51	08	40.4	20.6	RuEN002J95
K11M04M	C2011	06	30.17093	17	16	40.46	+51	08	40.4		CEN002H06
K11M04M	C2011	06	30.17470	17	16	40.26	+51	08	40.4	20.6	RcEN002H06
K11M04M	C2011	06	30.21401	17	16	39.12	+51	08	40.7	21.1	RoEN002H01
K11M04M	C2011	06	30.22508	17	16	38.79	+51	08	40.8	20.7	RoEN002H01
K11M04M	KC2011	06	30.22584317	16	16	38.75	+51	08	40.2	21.5	VtEN002H21
K11M04M	KC2011	06	30.23837617	16	16	38.36	+51	08	40.1	21.6	VtEN002H21
K11M04M	C2011	06	30.24465	17	16	38.21	+51	08	40.6	20.7	RoEN002H01
K11M04M	KC2011	06	30.25114117	16	16	37.99	+51	08	40.1	21.6	VtEN002H21
K11M04M	SC2011	06	30.44945	17	16	32.19	+51	08	40.3	20.8	RoEN002F65
K11M04M	SC2011	06	30.45203	17	16	32.12	+51	08	40.3	20.9	RoEN002F65
K11M04M	SC2011	06	30.45462	17	16	32.04	+51	08	40.2	20.7	RoEN002F65
K11M04M	MC2011	07	01.22744317	16	16	09.60	+51	08	34.9	20.8	RuEN002H36
K11M04M	MC2011	07	01.25754917	16	16	08.73	+51	08	33.9	21.3	RuEN002H36
K11M04M	JC2011	07	01.34282	17	16	06.15	+51	08	35.6	21.5	RoEN002695
K11M04M	JC2011	07	01.38002	17	16	05.06	+51	08	35.3	21.4	RoEN002695
K11M04M	SC2011	07	01.40483	17	16	04.38	+51	08	35.4	20.7	RoEN002F65
K11M04M	SC2011	07	01.41134	17	16	04.18	+51	08	35.3	20.7	RoEN002F65
K11M04M	SC2011	07	01.41851	17	16	03.95	+51	08	35.3	20.9	RoEN002F65
K11M04M	SC2011	07	01.42973	17	16	03.61	+51	08	35.0	20.1	VoEN002F65

Observer details:

[568 Mauna Kea](#). Observer D. Woodworth. Measurers D. J. Tholen, R. J. Wainscoat, H. Hsieh. 3.6-m Canada-France-Hawaii Telescope.
[695 Kitt Peak](#). Observers M. Trueblood, M. Rehnberg, R. Crawford. Measurer R. Crawford. 2.1-m f/7.7 Ritchey-Chretien + CCD.
[926 Tenagra II Observatory](#). Observers S. Abe, J. K. Guo, W. P. Chen. Measurer S. Abe. 0.81-m f/7 Ritchey-Chretien + CCD.
[B01 Taunus Observatory, Frankfurt](#). Observers R. Kling, U. Zimmer. Measurer R. Kling. 0.6-m f/3.3 Cassegrain + CCD.
[F51 Pan-STARRS 1, Haleakala](#). Observers N. Primak, A. Schultz, S. Watters, J. Thiel, T. Goggia. Measurer PS1 Science Consortium. 1.8-m Ritchey-Chretien + CCD.
[F65 Haleakala-Faulkes Telescope North](#). Observers T. Lister, N. Howes, G. Sostero, E. Guido. 2.0-m f/10 Ritchey-Chretien + CCD, 2.0-m f/10.0 Ritchey-Chretien + CCD.
[H01 Magdalena Ridge Observatory, Socorro](#). Observers W. H. Ryan, E. V. Ryan. Measurer W. H. Ryan. 2.4-m f/8.9 reflector + CCD.
[H06 RAS Observatory, Mayhill](#). Observer H. Sato. 0.50-m f/4.5 reflector + CCD.
H21 Astronomical Research Observatory, Westfield. Observer R. Holmes. Measurers T. Vorobjov, S. Foglia. 0.81-m f/4.0 astrograph + CCD.
[H36 Sandlot Observatory, Scranton](#). Observer G. Hug. 0.56-m reflector + CCD.
[J95 Great Shefford](#). Observer P. Birtwhistle. 0.40-m f/6.0 Schmidt-Cassegrain + CCD.

Orbital elements:

2011 MM4
Epoch 2011 June 28.0 TT = JDT 2455740.5 MPC
M 314.90353 (2000.0) P Q
n 0.01532040 Peri. 165.20119 -0.18383127 +0.11491448
a 16.0554533 Node 278.53313 +0.77137456 +0.63242945
e 0.4253032 Incl. 99.19686 +0.60925147 -0.76604677
P 64.3 H 9.4 G 0.15
From 73 observations 2011 June 24-July 1. E-assumed.

Ephemeris:

2011 MM4	a,e,i = 16.06, 0.43, 99	q = 9.2270
Date TT	R. A. (2000) Decl. Delta r Elong. Phase V	
2011 06 01	17 31 14.7 +50 36 05 13.1910 13.5113 106.3 4.1 21.0	
...		
2011 06 16	17 23 45.8 +51 01 16 13.1721 13.4811 105.6 4.2 21.0	
...		
2011 06 24	17 19 43.8 +51 07 24 13.1715 13.4650 104.7 4.2 21.0	
...		
2011 06 30	17 16 45.4 +51 08 41 13.1751 13.4529 103.7 4.2 21.0	
2011 07 01	17 16 16.1 +51 08 37 13.1761 13.4509 103.6 4.2 21.0	

2011 07 02	17 15 47.0 +51 08 29	13.1771 13.4488	103.4	4.2	21.0
...					
2011 07 08	17 12 56.3 +51 06 06	13.1850 13.4367	102.2	4.2	21.0
...					
2011 07 16	17 09 21.9 +50 58 56	13.2000 13.4206	100.4	4.3	21.0
...					
2011 07 31	17 03 33.8 +50 34 39	13.2394 13.3904	96.4	4.3	21.0

A. U. Tomatic

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M.P.E.C. 2011-N02

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