

2019 HL4

C. Hoegner, B. Stecklum, P. Bacci, M. Maestripieri, L. Tesi, G. Fagioli, S. Foglia, G. Galli, L. Buzzi, V. Robert, et al.

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MPEC 2019-J10 : 2019 HL4

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2019 HL4

Observations:

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     K19H04L KC2019 05 02.16514312 09 32.21 +05 18 56.5          19.1 VuEJ010H21

Observer details:
033 Karl Schwarzschild Observatory, Tautenburg.  Observers C. Hoegner,
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B. Stecklum. Measurer B. Stecklum. 1.34-m f/3 Schmidt + CCD.
104 San Marcello Pistoiese. Observers P. Bacci, M. Maestripieri. Measurers P. Bacci, L. Tesi, G. Fagioli. 0.60-m reflector + CCD.
203 GiaGa Observatory. Observers S. Foglia, G. Galli. Measurer G. Galli. 0.36-m f/5.76 Schmidt-Cassegrain + CCD.
204 Schiaparelli Observatory. Observer L. Buzzi. 0.84-m f/3.5 reflector + CCD.
511 Haute Provence. Observers V. Robert, K. Baillie, M. Lemoigne, S. Bouquillon, B. Carry, P. David, M. Delbo, M. Dennefeld, D. Hestroffer, F. Spoto, D. Souami, P. Tanga, F. Taris, W. Thuillot. Measurers W. Thuillot, S. Bouquillon, F. Taris, T. Carlucci, C. Barache. 1.20-m f/6 reflector + CCD.
587 Sormano. Observers A. Butti, L. Iachelini, A. Mahu, L. Molteni. Measurer A. Butti. 0.5-m f/6.8 reflector + CCD.
595 Farra dIsonzo. Observer E. Pettarin. 0.61-m f/4.5 reflector + CCD.
658 National Research Council of Canada. Observer D. D. Balam. 1.82-m reflector + CCD.
703 Catalina Sky Survey. Observers D. C. Fuls, H. Groeller. Measurers B. M. Africano, E. J. Christensen, G. A. Farneth, D. C. Fuls, A. R. Gibbs, A. D. Grauer, H. Groeller, R. A. Kowalski, S. M. Larson, G. J. Leonard, T. A. Pruyne, D. Rankin, R. L. Seaman, F. C. Shelly. 0.68-m Schmidt + 10K CCD.
958 Observatoire de Dax. Observers P. Dupouy, J. B. de Vanssay. Measurer P. Dupouy. 0.43-m f/2.7 reflector + CCD.
C43 Hoyerswerda. Observer P. Lindner. 0.30-m f/6.3 Schmidt-Cassegrain + CCD.
C77 Bernezzo Observatory. Observer A. Mantero. 0.25-m f/4.0 reflector + CCD.
C95 SATINO Remote Observatory, Haute Provence. Observer J. Jahn. 0.60-m f/3.2 Newtonian reflector + CCD.
F51 Pan-STARRS 1, Haleakala. Observers J. Bulger, K. Chambers, T. Lowe, E. Magnier, A. Schultz, M. Willman. Measurers S. Chastel, M. Huber, Y. Ramanjooloo, R. Wainscoat, R. Weryk. 1.8-m 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 Ritchey-Chretien + CCD.
H21 Astronomical Research Observatory, Westfield. Observer R. Holmes. Measurers S. Foglia, L. Buzzi, T. Linder, R. Holmes. 0.76-m f/3.0 astrograph + CCD.
I52 Steward Observatory, Mt. Lemmon Station. Observers D. C. Fuls, H. Groeller, B. M. Africano. Measurers B. M. Africano, E. J. Christensen, G. A. Farneth, D. C. Fuls, A. R. Gibbs, A. D. Grauer, H. Groeller, R. A. Kowalski, S. M. Larson, G. J. Leonard, T. A. Pruyne, D. Rankin, R. L. Seaman, F. C. Shelly. 1.0-m reflector + CCD.
I93 St Pardon de Conques. Observer F. Losse. 0.40-m f/3.7 reflector + CCD.
J69 North Observatory, Clanfield. Observer D. Briggs. 0.41-m f/4.5 Newtonian reflector + CCD.
J95 Great Shefford. Observer P. Birtwhistle. 0.41-m f/6.3 Schmidt-Cassegrain + CCD.
K38 M57 Observatory, Saltrio. Observer G. Baj. 0.3-m f/5.5 Ritchey-Chretien + CCD.
K63 G. Pascoli Observatory, Castelvecchio Pascoli. Observer R. Bacci. 0.41-m f/3.2 Newtonian reflector + CCD.
K80 Platanus Observatory, Lusowko. Observer T. Kluwak. 0.28-m f/2.2 Schmidt + CCD.
K87 Dettelbach Vineyard Observatory. Observer B. Haeusler. 0.30-m Schmidt-Cassegrain + CCD.
K88 GINOP-KHK, Piszkesteto. Observers K. Sarneczky, A. Pal. Measurer K. Sarneczky. 0.60-m Schmidt + CCD.
L01 Visnjan Observatory, Tican. Observers K. Korlevic, G. Kervina. Measurer K. Korlevic. 1.0-m f/2.9 reflector + CCD.
V01 Mountainville Observatory, Alpine. Observer B. Sheets. 0.35-m Schmidt-Cassegrain + CCD.
W34 Squirrel Valley Observatory, Columbus. Observer R. L. Flynn. 0.2-m f/7.0 Schmidt-Cassegrain + CCD.
Z80 Northolt Branch Observatory. Observer G. Wells. Measurers D. Bamberger, G. Wells. 0.25-m f/8.0 Ritchey-Chretien + CCD.
Z99 Clixby Observatory, Cleethorpes. Observer A. Mickleburgh. 0.36-m f/8 Schmidt-Cassegrain + CCD.

Orbital elements:

2019 HL4 Earth MOID = 0.0548 AU
Epoch 2019 Apr. 27.0 TT = JDT 2458600.5 MPC
M 338.16551 (2000.0) P Q
n 0.59621163 Peri. 211.58370 -0.36165641 +0.88783045
a 1.3980920 Node 39.36854 -0.73431947 -0.08321734
e 0.2622866 Incl. 26.65268 -0.57443847 -0.45258366
P 1.65 H 23.1 G 0.15 U 6

Residuals in seconds of arc

190414	F51	0.4+	0.6-	190429	958	0.3+	1.6-	190430	511	1.0+	0.6+
190414	F51	0.1-	0.3+	190429	958	0.3+	2.2-	190430	511	0.2+	0.3-
190414	F51	0.1+	0.2-	190429	C95	0.1-	0.5-	190430	511	0.6+	0.1+
190416	F51	0.0	0.2+	190429	958	0.2-	1.6-	190430	511	0.9+	0.6+
190416	F51	0.4-	0.1-	190429	C95	0.0	0.5-	190430	511	0.7+	0.2+
190416	F51	0.1+	0.2+	190429	J95	0.4+	0.1-	190501	033	0.2+	0.4-
190428	703	0.3+	0.9+	190429	J95	0.3+	0.5-	190501	033	0.0	0.5-
190428	703	0.4-	0.3+	190429	J95	0.0	0.2+	190501	033	0.2+	0.5-
190428	703	0.3+	0.3+	190429	C95	0.1+	0.0	190501	033	0.1+	0.3-
190428	703	1.0+	0.4-	190429	J69	0.1+	0.2-	190501	I52	0.3+	0.3-
190428	H01	0.2+	0.1+	190429	J69	0.0	0.3-	190501	I52	0.3+	0.6-
190428	H01	0.2+	0.0	190429	Z99	0.0	0.0	190501	I52	0.2+	0.5-
190428	H01	0.0	0.3-	190429	Z99	0.1-	0.6-	190501	I52	0.5+	0.5-
190428	H01	0.1-	0.2-	190429	J69	0.0	0.1-	190501	658	0.6-	0.8+
190428	I52	0.4+	0.1-	190429	Z99	0.5+	0.6-	190501	658	0.6-	0.2+
190428	I52	0.2-	0.2-	190429	C95	0.1-	0.2+	190501	658	0.4-	0.3+
190428	I52	0.2+	0.6+	190429	J69	0.3+	0.0	190501	658	0.1-	0.2+
190428	K63	0.2+	0.7-	190429	204	0.1+	0.3-	190501	658	0.1-	0.3-
190428	K63	0.5+	0.6-	190429	033	0.1+	0.4-	190501	104	0.1+	0.4-
190428	K63	0.9+	0.2-	190429	033	0.2+	0.3-	190501	104	0.1+	0.4-
190428	C77	2.6+	0.6+	190429	033	0.0	0.4-	190501	104	0.2+	0.5-

```
190428 C77  0.1+  0.2+    190429 033  0.0   0.5-    190501 595  0.4+  0.7-
190428 C77  1.4-  1.0+    190429 204  0.2+  0.1+    190501 595  0.3+  0.1+
190429 I52  0.2+  0.3-    190430 204  0.1+  0.3-    190501 L01  0.0   0.1-
190429 I52  0.1+  0.2-    190430 Z80  0.7+  0.4+    190501 595  0.4+  0.6-
190429 I52  0.1-  0.3-    190430 Z80  0.2+  0.0     190501 L01  0.3+  0.0
190429 I52  0.1+  0.2-    190430 658  1.4-  0.8+    190501 L01  0.2-  0.2+
190429 V01  0.2+  1.1-    190430 658  1.2-  0.7+    190501 K87  0.5+  0.5-
190429 V01  0.3+  1.4-    190430 658  1.1-  0.5+    190501 K87  0.6+  0.3-
190429 V01  0.3+  0.8-    190430 658  0.9-  0.6+    190501 K87  0.6+  0.2-
190429 703  0.7+  0.2-    190430 658  0.7-  0.4+    190501 K88  0.6+  0.0
190429 703  1.5+  1.3-    190430 K80  0.4+  0.4-    190501 K88  0.3+  0.3-
190429 703  0.9-  1.9-    190430 K80  0.2+  0.5-    190501 K88  0.4+  0.4-
190429 703  0.7+  0.8+    190430 K87  0.1-  0.7-    190501 K38  0.2+  0.8-
190429 587  0.2-  0.0     190430 K87  0.2-  0.8-    190501 203  0.1+  0.7-
190429 587  0.6+  0.3-    190430 K87  0.3-  0.9-    190501 K38  0.0   0.7-
190429 587  0.0   0.2-    190430 K87  0.3-  0.5-    190501 203  0.3+  0.5-
190429 K88  0.3+  0.3+    190430 511  1.1+  0.9+    190501 K38  0.1+  0.2-
190429 K88  0.0   0.2-    190430 511  0.9+  0.5+    190501 203  0.1-  0.5-
190429 K88  0.3+  0.2+    190430 511  0.8+  0.5+    190501 K38  0.1-  1.2-
190429 I93  0.6+  0.2-    190430 511  0.8+  0.5+    190502 W34  0.3+  0.8-
190429 I93  0.2+  0.4-    190430 511  0.3+  0.1-    190502 W34  0.8+  0.4-
190429 I93  0.0   0.2-    190430 511  1.0+  0.9+    190502 W34  0.2+  0.0
190429 C43  0.1+  0.4-    190430 511  0.6+  0.4+    190502 H21  0.1+  0.4-
190429 C43  0.3+  0.2-    190430 511  0.6+  0.4+    190502 H21  0.3+  0.2-
190429 C43  0.2+  0.0     190430 511  0.5+  0.4+    190502 H21  0.2+  0.5-

Ephemeris:
2019 HL4                a,e,i = 1.40, 0.26, 27                q = 1.0314
Date    TT    R. A. (2000) Decl.     Delta      r     Elong.  Phase     V
2019 04 03    15 26 56.1 +47 15 52   0.2719  1.1488   117.0    50.9    22.5
...
2019 04 18    14 32 29.4 +42 24 39   0.1548  1.1016   125.8    47.7    21.1
...
2019 04 26    13 25 54.1 +29 48 22   0.1008  1.0803   135.5    40.7    19.9
...
2019 05 02    12 11 49.8 +06 11 21   0.07667 1.0665   138.7    38.6    19.2
2019 05 03    11 57 59.7 +00 56 28   0.07533 1.0644   137.1    40.1    19.2
2019 05 04    11 43 58.0 -04 26 28   0.07494 1.0623   134.8    42.3    19.3
...
2019 05 10    10 21 50.0 -32 02 38   0.09083 1.0513   115.1    60.5    20.2
...
2019 05 18    08 57 06.3 -48 39 37   0.1392  1.0402    98.1    74.3    21.5
...
2019 06 02    07 32 06.2 -56 58 50   0.2455  1.0314    87.1    79.1    22.9

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- J97B01 (the packed version of the full form)
- B01 (the abbreviated form)

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