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THE ASTEROID 2002 CE26

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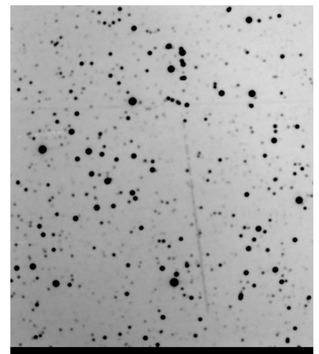
ABSTRACT

The asteroid 2002 CE26 was discovered by LINEAR on 10 February 2002 and is a binary system. It was observed with radar at Arecibo in 2004 and by NASA's Wide-field Infrared Survey Explorer (WISE) spacecraft. Another investigations were published by Shepard et al. (2006). Both works indicate asteroid´s diameters of 3.5 and 3.3 km. The studies suggest that the primary has a rotation period of 3.3 h and the secondary has an orbital period of about 16 h. Shepard et al. estimate that the secondary is roughly 0.3 km in diameter. Studies by radar estimate that this asteroid could have a second companion, but it is not verified yet. The asteroid was at 18.4 million km (0.123 AU) from Earth at at closest approach on Sept. 9th.

Our work aim to help refine the orbital parameters and the rotation period of the asteroid by astrometry and accurate lightcurves. From our Observatory, located in Pasto-Colombia, we captured several pictures, videos and astrometry data during several days. Our data was published by the Minor Planet Center (MPC) and also appears at the web page of NEODyS. The pictures of the asteroid were captured with the following equipment: CGE PRO 1400 CELESTRON (f/11 Schmidt-Cassegrain Telescope) and STL-1001 SBIG camera.

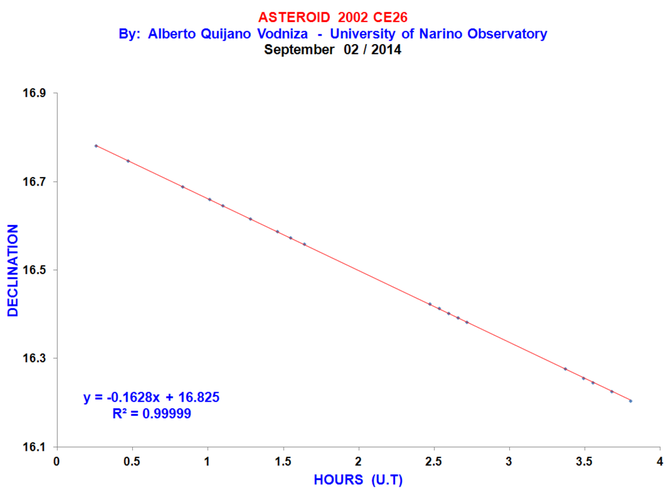
We obtained the light curve of the body. Astrometry was carried out, and we calculated the orbital elements.

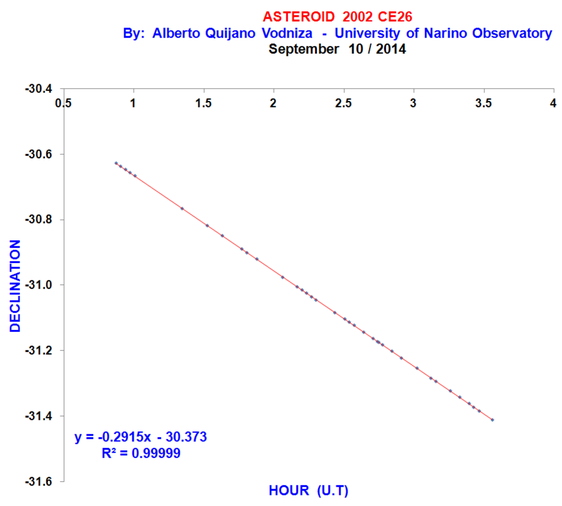


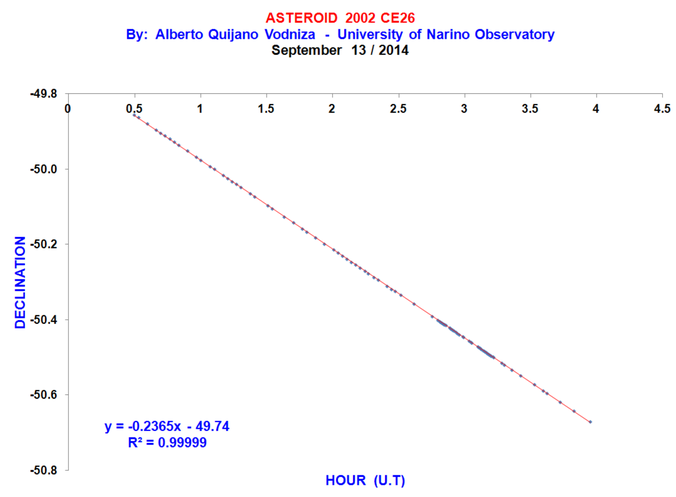
Realtime Space Weather Photo Gallery

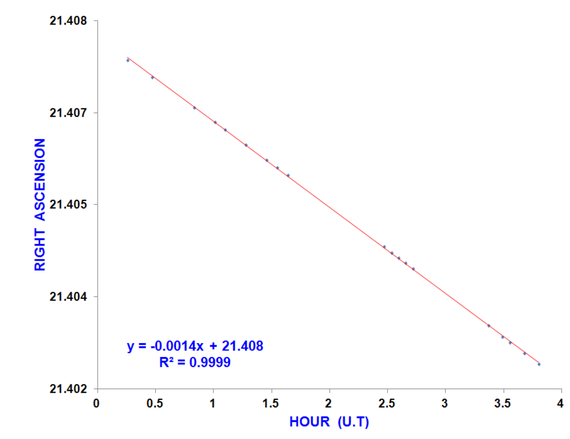
ASTEROID FLYBY TODAY: A strange and interesting asteroid is flying past Earth today. 2002 CE26 is a binary system consisting of a primary space rock 3.5 km in diameter orbited by a moon about one-tenth as wide. The strange thing is, radar data suggest that the asteroid's moon might have an even smaller moon of its own. Alberto Quijano Vodniza of the University of Narino Observatory in Colombia photographed the potentially-triple system streaking through the constellation Pegasus on Sept. 2nd:

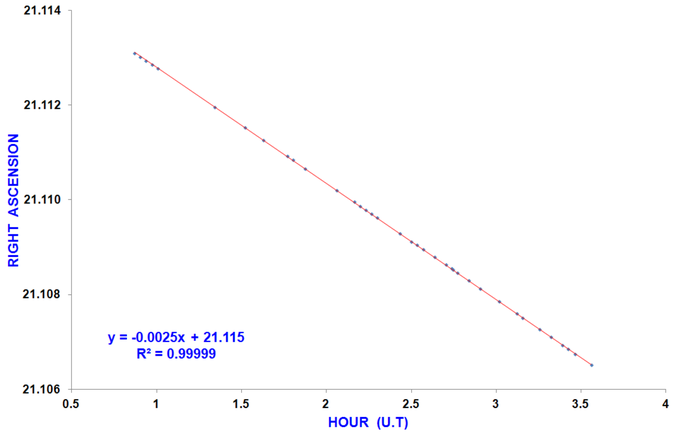
At closest approach on Sept. 9th, 2002 CE26 will be 18.4 million km (0.123 AU) from Earth. That is relatively far away, but because of the asteroid's large size, it is still possible to obtain meaningful data from the flyby. NASA astronomers will be pinging the system using the Goldstone radar in the Mojave desert. The Goldstone team says "we should be able to get coarse-resolution images of the primary. Echoes from the secondary will be weak and on the edge of detectability."

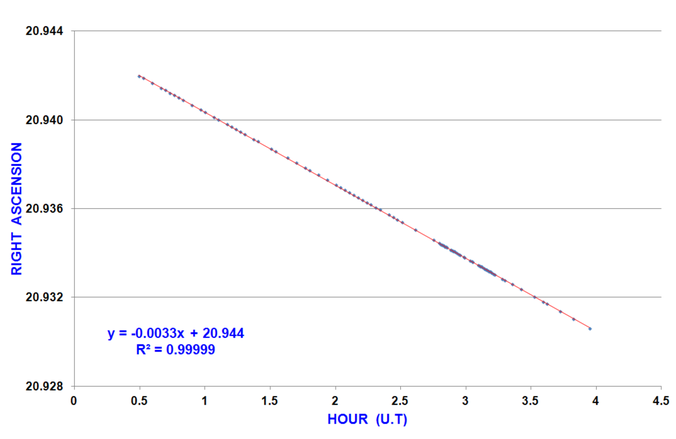


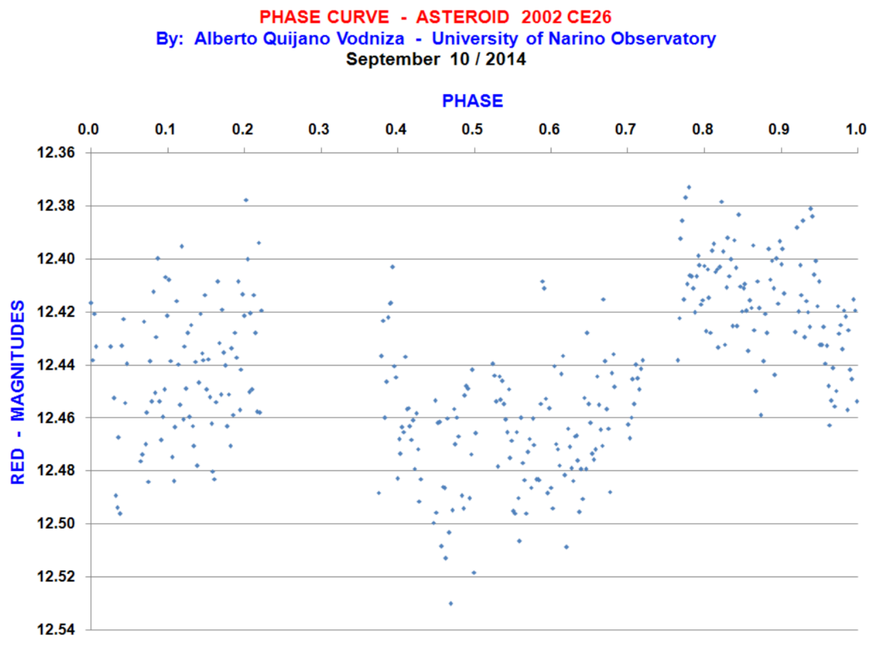












(276049) 2002 CE26

(2002 CE26)

Discovery Circumstances:	LINEAR - Lincoln Laboratory ETS, New Mexico 10 Feb 2002	(1)
Orbital Type:	AP	(*)(2)(3)
Taxonomic Type:	-	-
Albedo:	0.030	(4)
Diameter:(km)	3.331 km	(5)
H:(mag)	16.80	(#)
G:	0.15	(#)
U-B:(mag)	-	-
B-V:(mag)	-	-
V-R:(mag)	-	-
R-I:(mag)	-	-
Rotation Period:(hrs)	3.2930+-16	(6)(7)(8)
Quality:	3RB !	(6)(7)(8)

SUMMARY AND CONCLUSIONS

We obtained the following orbital parameters:
eccentricity = 0.5620391 +/- 0.000775,
semi-major axis = 2.24919404 +/- 0.00424 A.U,
orbital inclination = 47.37486 +/- 0.024 deg,
longitude of the ascending node = 161.92004 +/- 0.0017 deg,
argument of perihelion = 227.94440 +/- 0.032 deg,
mean motion = 0.29218888 +/- 0.000827 deg/d,
perihelion distance = 0.98505901 +/- 0.000113 A.U,
aphelion distance = 3.51332907 +/- 0.00815 A.U.
The asteroid has an orbital period of 3.37 years. The parameters were calculated based on 150 observations (2014 September: 02 to 13) with mean residual = 0.147 arcseconds.

We photographed the asteroid straking through the constellation Pegasus on september 02/2014 and a video of the asteroid from our Observatory was published on the main page of the "SPACEWEATHER" web (september 06/2014).

References

(1) *M.P.E.C.* 2002-C78

(002) Fang, J. & J-L. Margot (2012) Astron. J. 143, 59. (THE ROLE OF KOZAI CYCLES IN NEAR-EARTH BINARY ASTEROIDS) (2002CE26,2004DC,2003YT1,Didymos,1991VH)

(003) Vodniza, A.Q. & M.R. Pereira (2015) LPSC 46, 1231. (THE ASTEROID 2002 CE26)