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S/2009 (93) 1 AND S/2009 (93) 2

F. Marchis and B. Macomber, Carl Sagan Center at the SETI Institute and University of California at Berkeley; J. Berthier and F. Vachier, Institut de Mécanique Céleste et de Calcul des Ephémérides, Observatoire de Paris; and J. P. Emery, University of Tennessee, Knoxville, report that adaptive-optics images were recorded of (93) Minerva, a large C-type main-belt asteroid, with the 10-m Keck II telescope [+ NIRC2 camera (angular resolution up to $0''.042$, corresponding to a spatial resolution of 65 km) + Fe II filter (central wavelength at 1.64 μm)] between Aug. 16.57 and 16.64 UT, with the target at r = 2.117 AU and phase angle $20^\circ.0$. The direct images reveal that the large minor planet has an almost-spherical shape with an average diameter of 145 km. Additionally, these observations show the presence of a companion $\sim$ 4 km in diameter at $0''.41$ (projected distance of 630 km) in p.a. 275° detected in every image recorded over the 1.8-hr baseline. Careful analysis of three images indicates the presence of a second satellite ($\sim$ 3 km) and located closer to the primary at an apparent distance of 380 km ($0''.25$) in p.a. 209°. With (87) Sylvia (cf. *IAUC* 8582), (45) Eugenia (cf. *IAUC* 8817), and (216) Kleopatra (cf. *IAUC* 8980), this is the fourth multiple system with two small-kilometer-sized satellites to be discovered and imaged in the main asteroid belt.

COMET C/2009 Q4 (BOATTINI)

A. Boattini reports his discovery of a strongly condensed comet with coma diameter $\sim 8''$ (slightly elongated in p.a. 250°) in CCD images taken with the Catalina 0.68-m Schmidt telescope (discovery observation tabulated below); Catalina images taken by R. E. Hill on Aug. 28.4 UT show a small nuclear condensation with a $2''$ coma and a narrow tail $\sim 10''$–$15''$ in p.a. 290°. Following posting on the 'NEOCP' webpage, R. Ligustri (Udine, Italy) writes that his CCD images on Aug. 29.4 (remotely using a 0.25-m reflector near Mayhill, NM) show a slightly diffuse coma with diameter $\sim 15''$. J. V. Scotti notes that images taken on Aug. 30.5 with the Spacewatch 1.8-m reflector show a $9''$ coma and a $0'.68$ tail in p.a. 257°.

2009 UT	α_{2000}	δ_{2000}	Mag.	*Observer*
Aug. 26.47241	$4^h27^m20^s.05$	$+8^\circ18'42''.1$	18.9	Boattini

The available astrometry, preliminary parabolic orbital elements [T = 2009 Nov. 1.603 TT, q = 1.50024 AU, $i = 11^\circ.627$, $\omega = 301^\circ.086$, $\Omega = 135^\circ.512$ (equinox 2000.0)], and an ephemeris appear on *MPEC* 2009-Q84.

  Daniel W. E. Green