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COMET C/2003 S4 (LINEAR)

Z. Sekanina, Jet Propulsion Laboratory, writes: "Application of my comet fragmentation model (Sekanina 1982, in *Comets*, Univ. of Arizona Press, p. 251) to this comet's observed duplicity (*MPECs* 2004-T44 and 2004-U10) shows that component B is the principal nucleus. This result is supported by the location of component A between components B and C, a suspected third fragment, on an image taken by R. Ferrando on 2004 Oct. 9 (see `http://www.aerith.net/comet/catalog/2003S4/pictures.html`). The astrometric observations made in Sept.–Oct. 2004 allow one to determine four of the model's five parameters for component A. The radial component of its separation velocity from B is indeterminate. Solutions with this velocity component assumed to point away from the sun provide marginally better data matches. When it is limited to a range from 0 to 2 m/s, the time of splitting comes out to be between 2004 May 23 and June 17 (3 days before to 22 days after perihelion) at 3.86 AU from the sun, with the differential nongravitational deceleration decreasing from 140 to 90 units of 10^{-5} solar attraction and with the transverse and normal components of the separation velocity near 0.8 m/s in the direction opposite the orbital motion and 0.2 m/s pointing below the orbital plane, respectively. The high deceleration of the companion (nucleus A) indicates that it is a short-lived fragment with an estimated lifetime of 12–33 equivalent days. At a heliocentric distance of $\sim$ 4 AU this means that the secondary can possibly be observed for several more months, unless the comet's rapid fading, apparently triggered by this nucleus fragmentation, continues. Predicted separations and position angles of A relative to B are as follows (0 TT, equinox 2000.0): 2004 Nov. 11, $12''.9$, 289°; Dec. 1, $13''.9$, 296°; Dec. 21, $14''.7$, 301°; 2005 Jan. 10, $15''.5$, 304°; Jan. 30, $16''.5$, 305°; Feb. 19, $17''.8$, 304°; Mar. 11, $19''.6$, 301°."

SUPERNOVA 2004fx IN MCG –02-14-3

M. Salvo, B. Schmidt and M. Bessell, the Australian National University (ANU), report that a spectrogram (range 350–530 nm) of SN 2004fx (cf. *IAUC* 8431), obtained with the ANU 2.3-m telescope (+ Double-Beam Spectrograph) at Siding Spring on Nov. 8.54 UT, shows the P-Cyg lines of Hβ, Hγ, and Hδ typical of a type-II supernova $\approx$ 2 weeks after explosion. The expansion velocity derived from the Fe II 5169 line, also visible in the spectrum, is 6600 km/s, after correcting for the NED recession velocity of the host galaxy.

2004 November 10 *Daniel W. E. Green*