Circular No. 8555

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SUPERNOVA 2005cs IN M51

M. Modjaz, R. Kirshner, and P. Challis, Harvard-Smithsonian Center for Astrophysics, report that a spectrogram (range 340–740 nm) of SN 2005cs (cf. *IAUC* 8553), obtained by R. Hutchins on June 30.23 UT with the F. L. Whipple Observatory 1.5-m telescope (+ FAST), shows it to be a young type-II supernova. The spectrum consists of a blue continuum and P-Cyg profiles of the Balmer and He lines. Adopting the NED recession velocity of 600 km/s for the host galaxy (from Brian *et al.* 1996, *Ap.J.* **473**, 130), the expansion velocity derived from the minimum of the Hβ line is $\sim$ 7500 km/s. Zero-velocity interstellar Na I D absorption with an equivalent width of ~ 0.02 nm is detected in the spectrum of SN 2005cs, indicating gas along the line-of-sight in our galaxy and thus suggesting some reddening by dust. Schlegel *et al.* (1998, *Ap.J.* **500**, 525) estimate $E(B-V) = 0.035$ mag of Galactic reddening along the line-of-sight to M51. Interstellar Na I D absorption is detected also at the redshift of the host galaxy, with comparable equivalent width, suggesting some host-galaxy extinction.

M. W. Richmond, Rochester Institute of Technology, reports that deep Hubble Space Telescope images of M51 (Hubble Heritage Project) taken in January 2005 show a cluster of young stars near the position of SN 2005cs (cf. *IAUC* 8553). The object closest to the position of the supernova on Itagaki's image is at $\alpha = 13^{\rm h}29^{\rm m}52^{\rm s}.803$, $\delta = +47^{\circ}10'36''.52$ (equinox 2000.0). This is a blue star; assuming $E(B-V) = 0.10$ based on the Na I D absorption reported by Modjaz *et al.* (above), the candidate has intrinsic colors B-$V = -0.2$ and V–$I = -0.4$ and, assuming a distance of 8.4 Mpc to M51, an absolute V magnitude of roughly -6. If this blue star was indeed the progenitor, one might expect SN 2005cs to evolve like SN 1987A, another type-II supernova with a blue progenitor.

G. M. Hurst, Basingstoke, England, reports that an unfiltered CCD image of M51 obtained by P. Birtwhistle (Great Shefford, England, 0.40-m Schmidt-Cassegrain reflector) on June 27.933 UT shows SN 2005cs at red mag 16.6 and at $\alpha = 13^{\rm h}29^{\rm m}52^{\rm s}.81$, $\delta = +47^{\circ}10'35''.3$ (equinox 2000.0).

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Total visual magnitude estimates: June 2.10, 11.8 (J. J. Gonzalez, Leon, Spain, 0.20-m reflector); 3.07, 11.9 (N. Biver, Ablis, France, 0.41-m reflector); 6.09, 11.6 (Gonzalez); 16.08, 11.3 (Gonzalez).

2005 June 30 *Daniel W. E. Green*