

**SN 2013em** (A.R., 23 02 26.62 Dec. +32 31 31.2), scoperta il 27 luglio 2013 nella galassia pgc 214897 (offset 8W 6S), magnitudine 15.7, tipo: Ia ( [spettro Asiago odb.](#) )

PSN individuata da Ciabattari, Mazzoni e Petroni con il telescopio Newton da 50cm dell'Osservatorio di Monte Agliale (Lucca).



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Prepared using the Tamkin Foundation Computer Network SUPERNOVA 2013em = PSN J23022662+3231312 F. Ciabattari, E. Mazzoni, and G. Petroni, Borgo a Mozzano, Italy, report their discovery of an apparent supernova (mag 16.7) on unfiltered CCD images (limiting magnitude 20.1) obtained on July 27.04 and 30.93 UT with a 0.5-m Newtonian telescope in the course of the Italian Supernovae Search Project. The new object is located at R.A. = 23h02m26s.62, Decl. = +32d31'31".2 (equinox 2000.0; astrometry with respect to UCAC-2 stars), which is 8" west and 6" south of the center of the galaxy PGC 214897. Nothing is visible at this position on digitized plates of the Palomar Sky Survey from 1989 July 13 (F plate; limiting magnitude 20.3) and 1986 Nov. 3 (J plate; limiting mag 20.3). The variable was designated PSN J23022662+3231312 when it was posted at the Central Bureau's TOCP webpage and is here designated SN 2013em based on the spectroscopic confirmation reported below. Additional CCD magnitudes for 2013em: 2013 July 9, 19.5 (Ciabattari); 31.094, 16.5 (Federica Luppi and Luca Buzzi, Varese, Italy; 0.36-m f/7.1 reflector; position end figures 26s.61, 31".1; reference stars from CMC-14 catalogue; image posted at website URL

[http://www.astrogeo.va.it/pub/TOCP/PSN\\_P214897.jpg](http://www.astrogeo.va.it/pub/TOCP/PSN_P214897.jpg)

); 31.364, 15.7 (L. Elenin, Lyubertsy, Russia, and I. Molotov, Moscow, Russia; remotely taken with a 0.45-m f/2.8 telescope located at the ISON-NM Observatory near Mayhill, NM, USA; position end figures 26s.69 +/- 0".1, 31".5 +/- 0".1; UCAC-4 reference stars; limiting magnitude about 20.0; image posted at website URL

<http://spaceobs.org/images/TOCP/PSNJ23022662+3231312-20130731.png>

). P. Ochner, L. Tomasella, S. Benetti, E. Cappellaro, A. Pastorello, and M. Turatto, Osservatorio Astronomico di Padova, Istituto Nazionale di Astrofisica, report that an optical spectrogram (range 340-790 nm; resolution 0.9 nm), obtained on July 31.03 UT with the Asiago 1.22-m Galileo Telescope (+ Boller & Chivens spectrograph) shows that PSN J23022662+3231312 = SN 2013em is a normal type-Ia supernova. Assuming a recessional velocity of 6597 km/s ( $z = 0.02200$ ) for the host galaxy, PGC 214897 (Huchra et al. 2012, Ap.J. Suppl. 199, 26; via NED), an expansion velocity of about 10700 km/s is derived from the minimum of the Si II 635-nm line. The best match is found with several type-Ia supernovae -- and, in particular, with SN 2005am at a couple of days after maximum (Brown et al. 2005, Ap.J. 635, 1192). The Asiago classification spectra are posted at website URL

<http://graspa.oapd.inaf.it>

. Classification was made via GELATO (Harutyunyan et al. 2008, A.Ap. 488, 383) and SNID (Blondin and Tonry 2007, Ap.J. 666, 1024). NOTE: These 'Central Bureau Electronic Telegrams' are sometimes superseded by text appearing later in the printed IAU Circulars.

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