

China's 2.16m Telescope Helps Find Strangest Supernova

According to a recent issue of *Nature* magazine, an international team of astronomers have observed a supernova (dubbed iPTF14hls) with the most violent explosion in a strangest form with the help of the 2.16-meter telescope at Xinglong Observation Station under the National Astronomical Observatories, Chinese Academy of Sciences (NAOC).

A supernova is a transient astronomical event that occurs when a massive star approaches the end of its evolution. The dramatic and catastrophic destruction is marked by one final titanic explosion. During this process, the supernova radiates energy comparable to the sum of our Sun's radiant energy throughout its lifetime.

Supernova iPTF14hls was first identified as a hydrogen-rich nuclear collapse supernova, which had generated five consecutive large-scale energy releases in about 600 days after explosion with total burst energy a hundred times that of a normal supernova.

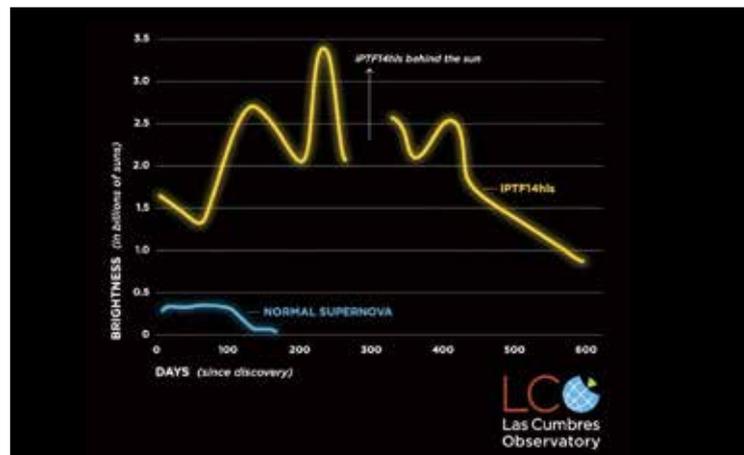
In the observation and research of the supernova, the 2.16-m telescope and the 80-cm TNT telescope (Tsinghua University-National Astronomical Observatory telescope) in Xinglong contributed to the collection of the first two spectra and a multi-color photometry data, respectively.

The 2.16-meter telescope, the first 2-m level optical telescope developed in China, has yielded fruitful research results after put into use in 1989. Since 2011, it has obtained the spectral data of various types of supernova, identified the spectral type of nearly 100 newly explored supernovas, and accumulated nearly 700 pieces of supernova spectral data.

These spectral data, combined with the photometric data from the 80-cm telescope, provided important constraints on the understanding of supernovae, precursor stars and stellar evolution physics. These data will be released in one to two years and hopefully make major contributions to supernova research.



The artistic conception of a supernova explosion (Credit: Greg Stewart, SLAC).



iPTF14hls grew bright and dim again at least five times over two years. This behavior has never been seen; a supernova typically remains bright for approximately 100 days and then fades. (Credit: LCO/S. Wilkinson)

The study was completed by an international cooperation team. The Chinese team was led by WANG Xiaofeng from Tsinghua University and ZHANG Tianmeng from NAOC.