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TITLE: From an amateur PN candidate to the Rosetta Stone of SN Iax research

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ABSTRACT:

On August 25th 2013 Dana Patchick from the “Deep Sky Hunters” (DSH) amateur astronomer group discovered a diffuse nebulosity in the Wide-field Infrared Survey Explorer (WISE) mid-IR image archive that had no optical counterpart but appeared similar to many PNe in WISE. As his 30th discovery he named it Pa 30 and it was added to the HASH PN database as a new PN candidate. Little did he know how important his discovery would become. 10 years later this object is the only known bound remnant of a violent double WD merger accompanied by a rare Type Iax SN, observed and recorded by the ancient Chinese and Japanese in 1181 AD. This makes Pa 30 and its central star IRAS 00500+6713 the only SN Iax remnant in our Galaxy, the only known bound remnant of any SN, and based on the central star spectrum the only Wolf-Rayet known that is neither a massive star nor the central star of a Planetary Nebula. We cover this story and our key role in it.