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DIVISION D / WORKING GROUP SUPERNOVA

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TRIENNIAL REPORT 2018-2021

The Supernova WG (SN-WG) was established about two decades ago, and disbanded as part of the great IAU reorganisation prior to the 2015 GW. Members of the SN-WG continued to work together and the WG was re-established under division D in 2015. Below is our second triannual report regarding its activity.

1. Developments within the past triennium

Progress: During the 2018-2021 triennium, the WG achieved significant progress in its main activity, which is regulating and promoting the rapid and orderly report of transients and supernovae for the benefit of the entire community, as we briefly detail below.

• **Expansion of the IAU Transient Name Server.** The main activity of the WG is oversight and input into the maintenance and further development of the Transient Name Server (TNS), the IAU approved instrument for reporting and name designation of supernovae and transients in general. During the last triennium, the TNS has been expanded to answer the needs of the growing community of researchers in time domain astronomy studying transients of all sorts (beyond supernovae). In particular, we expanded the service to answer the needs of the radio transient community, putting in place a mechanism to report and designate names of fast radio bursts (FRBs), and we are currently working with the Gamma-ray community to do the same for Gamma-Ray Bursts (GRBs).

• **Integration of Event Brokers.** During this period several event brokers – software hubs that ingest streams of transient reports from public sources, currently most the ZTF public alert stream, and report it to the community – have come online. It is foreseen that in the near future, access to transient alert streams will be done partly or mostly via such community brokers. We have adjusted the TNS system to accommodate this new mode of reporting, where in addition to the data source (the survey providing discovery data of new transients) there is also a reporter that provides service via selecting and processing alerts. The TNS is now keeping track, and providing proper credit, to both the data sources (surveys) and the reporters (brokers). Several brokers regularly report to the TNS, and it is likely the such reports will dominate the reported stream.

• **Continued support of digital data bases.** We continue to support the development and usage of digital data archives that make observations of transients and supernovae broadly available to the community is a searchable format. All public data accumulated on the TNS is stored and made accessible in the WISeREP public data bases (Yaron & Gal-Yam 2012).

2. Future prospects: looking forward to the era of the Rubin Observatory

With significant progress achieved during the last 3-year period, we look forward to continuing and developing the WG activity along the following lines. The TNS is currently used to distribute alerts from the large ZTF survey, and is set up to ingest and distribute the alert stream from the Rubin Observatory LSST survey. Multi-messenger studies using transients detected at different wavelengths, as well as non-EM transients, will benefit from the expansion of the TNS. We look forward to continuing our work during the next 3 years.

Avishay Gal-Yam
chair of Working Group

References

Yaron, O. & Gal-Yam, A. 2012, *PASP*, 124, 668