“All-Sky Automated Survey for SuperNovae: Big Science with Small Telescopes”

Even in the modern era, only human eyes survey the entire optical sky for the violent, variable, and transient events that shape our universe. To change this, we have built and implemented the All-Sky Automated Survey for Supernovae (ASAS-SN or "Assassin"). This is a long-term project designed to monitor the entire sky down to V~17 mag every 2-3 days using multiple telescopes, hosted by Las Cumbres Observatory Global Telescope Network, in the northern and southern hemispheres. Our telescopes (currently eight) consist of commercially available telephoto lenses and CCD cameras, so further expansion, leading to a 1-day cadence, would be straightforward and relatively inexpensive.

The primary focus of the survey is to find bright nearby supernovae (SNe) and other transient sources. We began running our real-time search for variable sources in late April 2013 with our first unit, "Brutus", and in May 2014 we have deployed "Cassius" in Chile, expanded to four telescopes in July 2015. ASAS-SN has already discovered about 350 bright nearby SNe, including ASASSN-15lh, the most luminous supernova ever discovered. We also discovered 700+ new cataclysmic variable stars, dramatic M-dwarf flares and AGN outbursts, and three tidal disruption events 100-200 Mpc away, closest such events ever found in optical light. ASAS-SN is an ongoing survey which, judging by its success so far and likely future expansion, promises to be innovative and prolific, delivering a steady stream of interesting discoveries for years to come, at relatively low cost.

Best wishes,

Kris