

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (IP)

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SCIENTIFIC COOPERATION AND EXPLORATION WITH THE UNISTELLAR NETWORK OF
CITIZEN ASTRONOMERS

Abstract

The Unistellar Network is by far the largest network of telescopes and citizen astronomers around the world, with 12,000 digital telescopes in more than 50 countries. This coordinated network collected over 5,400 scientific observations in 2023 from more than 200 different citizen astronomers contributing to a host of space science topics under the guidance of professional astronomers at the SETI Institute, the scientific partner of Unistellar. They have helped confirm the existence of multiple newly discovered exoplanets in partnership with NASA, tracked the explosive rise and fall of possible supernovae within minutes of their discovery such as SN 2023ixf in the Pinwheel Galaxy, revealed the shapes of near-Earth asteroids never before measured, caught major outbursts from faint comet 12P/Pons-Brooks months before its perihelion passage, and monitored 457 stellar occultations by asteroids to report on their orbits and sizes to the IAU's Minor Planet Center. We will share highlights from these key scientific results.

We will also present and interactively demonstrate our approaches to making scientific astronomy easier and more fun while also increasing accessibility and inclusivity. As the network has grown over the past year, this has included creating web and mobile app tools for citizen astronomers to plan science observations tailored to their locations and to rapidly alert them of new events to observe in real time. Beyond pure science, the Unistellar Network and its telescopes are powerful educational tools, with a growing community of schools, colleges, universities, engineering schools, and informal education centers participating both inside and outside the classroom. A recent highlight was the contribution of observations by sixteen high school students in Oakland, CA, U.S., to the confirmation of an unusually dense Saturn-sized exoplanet discovered by NASA's TESS mission, which led to them all becoming published coauthors in a major astronomical journal alongside citizen and professional astronomers from three continents. As its scientific and outreach impacts demonstrate, the Unistellar Network is a far-reaching collaboration that fosters cooperation, exploration, and understanding among its international participants, impressing the value and importance of Space upon present and future generations.