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Research, Teaching, and Outreach with the SARA Remote Observatory

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Our use of the SARA remote-operated observatories ranges from the classroom, through public outreach sessions, to graduate and faculty research. Teaching applications include enrichment sessions for freshman classes, and data-taking sessions for students in upper-level lab courses where they can derive asteroid distances, ages of star clusters, and properties of eclipsing binary systems. Graduate students can enrich their observational experience, where SARA forms a useful bridge between a modern, small campus observatory and the larger facilities many will use for dissertation research. Some students use the SARA facilities as the backbone of theses or dissertations; in one example, the student obtained all the ground-based data she needed to supplement Hubble images using SARA within a single year. Faculty research benefits from the regular access and (often) quick availability of these modestly-sized telescopes. I will show some examples of follow-up from the Galaxy Zoo public-participation project in which SARA results were the first available confirming or path-finding data (in cases of a quasar light echo and extended ionized clouds around active galaxies). Regular access allows the telescope's use in a "screening" fashion for surveys. Finally, the depth of images quickly available with such instruments lends itself to powerful public-outreach opportunities, with images taken "by request." One such session (at DragonCon in Atlanta) was able to satisfy requests for gravitational lenses, two dwarf planets, supernova remnants, and a dwarf galaxy in one session.