# WPU Participation in LIGO/VIRGO Gravitational Wave Electromagnetic Follow-up Observations

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Independent Observing group using <1 m aperture telescopes in New England skies. While most of the literature indicates that telescopes of the 0.5 meter class will not be able to properly image or detect transients, we wish to participate utilizing telescopes of this caliber as an “insurance” group, or “last ditch” group, providing upper limits to B/V/R band photometry.

1) **Sierra Stars Observatory:** 0.61 meter Cassegrain at Markleville, California and 0.81 meter at Mount Lemmon, Arizona, both with standard Johnson filters. Limiting magnitude for a 120-second V-band exposure is about 16. Maintained and owned by Rich Williams. Observatories are shared with other account holders. Follow-ups need 12 hours minimum notice. Owner is highly responsive to his customers via email and phone, and actively promotes and maintains his observatories for research.

2) **iTelescope group**. http://www.itelescope.net/ Numerous telescopes located in Siding Spring in Australia, Mayhill in New Mexico (USA), and Nerpio, Spain. At each location, there are research-grade 0.5 meter telescopes with Johnson filters. This service allows real-time telescope usage. In theory, this service could be used within minutes of a Gravitational Wave detection alert. Their live telescope usage feed from all four observatories may also allow “follow-the-night” observational follow-up. Many advanced amateurs and professionals use these facilities to track and discover asteroids. The support staff is highly responsive, providing global email, skype and telephone access. It will not be possible to over-ride existing observing runs at these sites, as it may be with Sierra Stars, but the trade-off is that they have numerous telescopes to use.

3) **New facility** at Jenny Jump State Park, NJ. On the site of the UACNJ, a group of amateurs who maintain a dark location. Building will require coordination, but site location and construction are taken care of. Looking to procure a 0.5m class scope for remote operations. This could provide 16$^{th}$ magnitude visual observing. Possible personal funding. (Benefits of working adjunct and on Wall Street.)

4) **Stamford Observatory, Stamford, CT**. We also are exploring assisting Charles Scoville in upgrading SO's 22-inch Maksutov. Needs a new imaging and detector packagel. Designed for photographic plate work in the 1950’s, and was a research-grade telescope during at first light in 1967, producing 1300 plates. Limiting visual magnitude of about 16. This facility would require about 2-3 hours of prep time from the moment of GW detection alert to observation, and will need active participation by the Observatory's amateur staff.

Deliverables from all of these observatories will be BVRI Johnson standard photometry. We understand that the expected locations of the discoveries are at extreme distances that are most likely out of the observational capacity of 0.5 meter telescopes. We also understand that the timescales for the outbursts may be on the order of minutes to seconds. Our goal is to be a “last ditch” group, or an “all-sky” group, with an independent program.