An Interplanetary Network-LIGO Collaboration

K. Hurley, UC Berkeley Space Sciences Laboratory

- **The IPN is a *full-time, all-sky* monitor of gamma-ray and magnetar bursts**
- **The IPN team presently has 38 members from 5 countries, representing 9 spacecraft***
- **It is sensitive to events with fluences >~10^{-7} erg cm^{-2} in the energy range above ~25 keV; $<z_{IPN}>=1.8$**
- **The IPN has been collaborating with LIGO since its earliest engineering runs; today it operates under a MoU covering science runs 5 and 6**
- **The detection rate is about 325 bursts per year; about 100 of them are not detected by Fermi, nor by Swift or INTEGRAL in their coded fields of view**
- **The IPN has a high detection rate of short GRBs: 18 per year**
- **The IPN localizes bursts by triangulation; accuracies range from arcminutes to 10's of degrees; data downlinks from spacecraft result in delays of up to a day or more**
- **Proposed deliverables to the LIGO team: dates, times, localizations, and light curves of IPN bursts; fluences, peak fluxes, and energy spectra when possible. Classification of the event (long or short duration, GRB or magnetar burst)**
- **Scientific Objectives:**
  - **Provide electromagnetic triggers for GW searches**
  - **Use GW triggers to investigate electromagnetic data**
  - **Combine sub-threshold LIGO and IPN event data to increase sensitivity of both**
  - **Combine LIGO and IPN event localizations**
- ***Fine print:** Today, the spacecraft comprising the IPN are AGILE, Fermi, RHESSI, Suzaku, Swift, INTEGRAL, Wind, MESSENGER and Odyssey. By 2015, this will change as old missions are turned off and new ones are launched. The exact composition is unpredictable.