S2 Burst Analysis Contributions from CSUDH Group: A Synthesis of Simulations, External Triggers, and Data Quality

• Injections with waveforms motivated from the astrophysical literature and with greater detail on the source (direction, distance, intensity distribution) and possibly from more elaborate and precise physical assumptions (3-d, recent data and simulations on SNs and GRBs).

• Matched filtering searches with best guess at SN and GRB waveforms (Z-Ms and other best guesses)

• A Monte-Carlo based traditional approach to injections/ source simulations. Calculate efficiencies for particular sources such as SNs and GRBs and reconstruct direction, distance and other MC “truth” parameters (particle-physics style) for calculation of systematic errors in reconstruction. Also some interest in testing ideas on environmental noise sources using IFO simulation tools such as E2E model.

• Better use of SNEWS and neutrino data available to the general scientific community; SNEWS now includes partially rebuilt Super-K, KamLAND, SNO, AMANDA and high energy cosmic ray experiments such as Auger and AMANDA may provide useful information for enhancing astrophysical relevance or for direct correlation. Interest in statistics of External triggers from SNEWS combined with multiple IFO coincidences.

• Data Quality Analysis of AS_Q and PEM with a particular interest in finding where in a segment to begin and end analysis and modifying DSOs and ETGs accordingly
Participants and Collaboration

K. Ganezer

W. Keig (S-K colleague)

G Jennings (Mathematician)

Possible CSULB MS student interested in neutrino and GW experiments as a thesis topic

• CSUDH Undergraduate Students (realistically one student) Especially Interested in Data Quality Monitoring (good project for undergrad)

Other Groups with Similar Proposals and Interests

• External Trigger group, U of Oregon, and Caltech for external triggers and coincidences

• Data Quality Syracuse, MIT, Caltech, and other groups

• Caltech, External Triggers Group, Oregon, and others also interested in injections and simulations