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S1 analysis goals: Burst Analysis Working Group

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Outline

- Goals for Nov 1
- Goals for beyond Nov 1
- Data quality: what is known

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Nov 1 goals

- Scientific result from untriggered search
  - » Upper limit on arrival rate of gw bursts, viewed as originating from fixed strength sources on a fixed distance sphere centered about Earth, expressed as an excluded region in the rate-strength diagram.
    - – Based on a mix (TBD) of 4-, 3-, and 2-way coincidence analysis
    - – Note: This is *not* an astrophysical interpretation
  - » Scientific result from triggered search
    - – Upper limit on the gravitational wave strain associated with gamma-ray bursts
      - • Finn, Mohanty, and Romano (PRD 1999) analysis
- GEO/LIGO data integration
  - » Demonstrate ability to run GEO and LIGO data through equivalent data processiong pipelines, up to the construction of temporal coincidences.
    - – Don't expect to have completed simulation/calibration, nor solved all issues relating to interpretation of coincidence between non-aligned ifos.

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Goals beyond Nov 1

- Astrophysical interpretation
  - » Increasing sophistication in modeling of source distributions
- GEO-LIGO coincident analysis
  - » Looming issues: calibration and coincidence
- Post-coincidence processing
  - » E.g., cross-correlation of time series during candidate coincidences

What we know about S1 data quality

- Band-limited rms noise more stationary than E7
  - » Significant variations in stationarity between bands
- Glitch rates are low and mostly steady
- Histograms show a rich repertoire of departures from Gaussianity
- Candidate veto channels identified during S1 for H2
  - » Work now under way on L1, H1 vetoes