DCSA Progress Report

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Data Development Groups

- Astrophysical Sources and Signatures
  - Target science
  - Waveforms
- Detector Characterization
  - Detector response, data quality, calibration, artifact identification
- Detection Confidence and Statistical Analysis
  - Analysis addressing target science with characterized data

DCSA Focus

- Short term
  - Data Development Group White Paper
- Long term
  - LSC software project management plan
    - Maintainability
    - Flexibility
    - Reliability
    - Usability
  - Coordinate writing of core numerical libraries

DCSA White Paper: Scope

- Data analysis modalities
  - Baseline analysis
    - 7x24, production-oriented
  - Speculative analysis
    - Proposal-based
- Focus: Baseline analysis
  - Sources, signatures & target science identified within ASIS
  - Detector and data properties identified by Detector Characterization

Outline: Skeleton

1. Burst Sources
    - 1.1. General Analysis Challenges
    - 1.2. Known Waveform
        - 1.2.1. Binary Inspiral
        - 1.2.2. Black Hole Ringdown
    - 1.3. Unknown Waveform
        - 1.3.1. Supernovae
        - 1.3.2. Unanticipated but triggered
        - 1.3.3. Unanticipated and untriggered
2. Periodic Sources
    - 2.1. General Analysis Challenges
    - 2.2. Fixed source
    - 2.3. Fixed location, wide-band search
    - 2.4. All sky, wide-band search
3. Stochastic Signals
    - 3.1. General Analysis Challenges
    - 3.2. Isotropic/Cosmological Signals
    - 3.3. Non-Isotropic/Galactic Signals

Outline: Flesh

1. Science Goals
   Specific science questions that data analysis is to address
2. Signature Characteristics
   Highlight signature properties that distinguish it from instrumental noise
3. Analysis Challenges
   Highlight any signature properties that make analysis particularly difficult
4. Statistical Tests
   Particular statistical tests that address science goals

White Paper: Status

- Extent Section Drafts
  - Burst Signals
    - Black hole ringdown
    - Unanticipated with trigger
  - Periodic Signals
  - Stochastic Signals
- In preparation
  - Binary inspiral, Supernovae, Unanticipated & untriggered
- Issues
  - Prioritization

Software Development

- Core Numerical Libraries
  - Atomic operations for analysis
- Goals
  - Reliability
  - Flexibility
  - Maintainability
  - Usability
- Status
  - Just beginning

Next Steps

- White Paper
  - Focus
  - Refinement
  - Integration
- Software Project Management
  - Organizing LSC code development effort
  - Define core library elements
  - Implement core library elements
  - All steps in close consultation with Lab & LDAS team