



Laser Interferometer Gravitational-Wave Observatory (LIGO)

External Triggers for LIGO

LSC 2001 Spring Meeting

Baton Rouge, LIGO Livingston Observatory

Szabolcs Márka et al.

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LSC proposal submitted

LIGO-G000313-00-D

Proposal to the LIGO Scientific Collaboration (LSC)

**Entry of LIGO into the Supernova Nova Early Warning System (SNEWS) and
Prototype Development of Real-Time LIGO Supernova Alert**

Present List of Proposers:

**Barry Barish, Kenneth Ganezer(CSUDH), Albert Lazzarini, Szabolcs Márka (Project Coordinator),
Benoit Mours(Caltech-LAPP), Peter Saulson (Syracuse), John Zweizig**



LIGO-SNEWS Project Long Term Goals

- **Receive and (ultimately) send real time SN alarms**
 - » **Prompt, automatic analysis upon alarm**
 - » **Near real time search for SN**
- **Distribute alarms to LSC**
- **Point of contact to**
 - » **Neutrino observatories (e.g. SNEWS)**
 - » **Gamma Ray Burst networks (e.g. GCN)**
 - » **Astronomers**
 - » **...**
- **Analyze data using external channel information**
 - » **Determine capabilities**
 - » **Develop strategies to extract information**



Members of the SNEWS collaboration attending the 2001 Marina Del Rey Supernova II Workshop

- International collaboration of SN sensitive neutrino detectors
- Provides near-real time SN alarm
- Based on inter-experiment coincidence
 - » **Timing and pointing information**
 - » **Very high confidence**
 - Less than 1 false alarm/100y !
- Coordinates detector downtime
- Centralized timing verification
- Privacy is ensured
 - » **Input data is strictly secured**



Status and the Near Future

Milky Way (Central Bulge)



- **We are able to receive alerts from**
 - » SNEWS (neutrino)
 - » GCN (formally BACODINE, GRB)
 - » Astronomy sources are coming soon...
- **We employ e-mail parsers at the present**
 - » but TCP/IP socket implementation is coming soon
- **SNEWS is interested in joint high rate test during LIGO engineering runs**
- **We participate in the work of the BURST Upper Limit Group**
 - » Our schedule is synchronized to achieve high integration
- **Alerts are distributed to interested LSC members**
 - » Please e-mail me if you would like to be on the list
 - smarka@ligo.caltech.edu
- **Next steps on the short term:**
 - » Enter Alarm information into LDAS database
 - » Develop LIGO (v0.0) reaction to external warnings
 - LDAS based system

Let's do it!