



Bilateral and Multilateral Data Sharing, Data Analysis and Observing

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Issues in LIGO Planning

- We are formulating our planning for 2002 - 2006
- Data, Operations, Upgrades arrive during this period.
- Several questions arise related to inter-project coordination/cooperation
- Rather than develop LIGO solutions, we open our planning by raising questions at this GWIC meeting



Issues In LIGO Planning - Data

- LIGO “engineering” data is arriving.
 - » LSC is fully involved in data sharing/analysis within LIGO.
- Formal LIGO science data will be available in 2 years
 - » even engineering data should have scientific value
- LIGO and TAMA have coordinated a short observation period with the 40 Meter and the TAMA 300.
 - » This was done under a particular bilateral project to project agreement.
- GEO and LIGO have discussed data sharing/analysis sharing
 - » GEO is a member of the LSC
 - but some GEO collaborators are outside the LSC
 - » Should agreement be a particular bilateral GEO-LIGO agreement?



Issues In LIGO Planning - Data

- Should agreements for data sharing or analysis sharing be:
 - » bilateral and individualized,
 - » bilateral but general in structure so as to enable additional partners (GEO-LIGO, GEO-Virgo, Virgo-LIGO,...),
 - » or generalized and multilateral (GEO, LIGO, Virgo, TAMA...)?
- What might GWIC's role be in supporting development of these arrangements?
 - » Author the "model" agreement?
 - » Advise and review early and model agreements?
 - » Be informed and observe only



Issues in LIGO Planning - Operations/Observing

- LIGO Science Run planned for 2002 - 2004
- Virgo, GEO, TAMA running may overlap this period
- What obligation do we have to coordinate observing?
- An illustrative and possibly troubling scenario - Virgo, LIGO, GEO and TAMA all decide separately to shut down in 2006 for significant upgrades. No interferometers run that year.
 - » Is this acceptable to us and to our sponsors/collaborators?
- LIGO may embark on a multiple interferometer upgrade program. How might we phase this with other operating interferometers?



Data Sharing/Exchange...

- LIGO/LSC has data analysis policy involving:
 - » proposals for access to data,
 - » proposals for publications,
 - » "full disclosure" of uses data is being put to,
 - » full ability of anyone in (LIGO I) collaboration to participate in any analysis,
 - » internal review of publications and presentations involving the data, etc.
- Other projects will have other policies.
- How are all these made commensurate with data sharing agreements?



...Data Sharing/Exchange

- What is shared?
 - » what level of data?
 - » what level of expertise on interpretation of data? Do experts accompany the data?
- Accessibility: who gets it, what control exists over use?
- Results: how are decisions reached regarding results that involve shared data? Once data sharing takes place, is there such a thing as a result that doesn't involve shared data?
- Authorship: How do we combine different project's authorship policies?



Collaborative Analysis

- This is distinguished from data sharing by the additional feature of analysis teams involving members from more than one project
- How are teams composed? Members proposed by projects? People free to join?
- How is analysis managed? How are activities coordinated? Who is the cognizant manager that teams report to?



Coordinated Operations

- Easy first step: simply report when planning up, down periods.
- How to insure that at least two (three?) interferometers are always "up"?
 - » LIGO "down" time will be 12 - 18 months for one interferometer. Expect other projects similar. Can we/should we coordinate upgrades, with at least two interferometer coverage, without some project suffering delay?
- Coordinate operations + collaborative analysis/data sharing: what is policy on data sharing/exchange when interferometer down for upgrade? Reciprocity broken.



Multilateral vs. Bilateral Agreements...

- These problems are solved in the writing of detailed agreements, but...
- Bilateral agreements, separately negotiated, may become inconsistent with each other on access issues, decision issues, use issues, etc.
- Can project A have access to data from B and C, but B not have access to C nor C to B? How does analysis proceed under circumstances like that?
- Do bilateral agreements form obstacles to more general agreements?



...Multilateral vs. Bilateral Agreements

- Should bilateral agreements be written to a model that is naturally useful in other parallel bilateral agreements
- ... or in extensible form to cover multilateral agreements?



Brillet's Suggestions...

- "Network data analysis":

well before we get interferometer data to exchange for a coherent "matched filter" search, we should start now to exchange "environment data". This would teach us how to produce and read data in the standardized format, and this could reveal interesting and unexpected correlations between USA, Italy, Germany, Japan, Australia.

We could start now, with a few accelerometers, and E.M. antennas. Only two or three persons from each site need to be involved in establishing the exchange, and in producing the data, plus sharing the analysis. Then we could start exchanging "noise data", or even simulated data, in order to get prepared for the future coherent detection searches. This will train people, help improving data exchange and data format, attract new people in the field, ...



... Brillet's Suggestions

- Astrophysical data bases :

- » we will all need the same astrophysical information :

- - "static data" (pulsar frequencies and position, for instance)
- - dynamic data : X/Gamma ray pulses, supernovae, neutrino detections, some bar data (?)...

It seems to me that the GWIC should take care of this common need, or at least coordinate the international effort, in order to avoid that each project have to establish its own agreements with the centers/collaborations which own these data. We should try to find a way for the GWIC to centralize these informations and make it available to our community.



Issues and GWIC Role

- Data Sharing
- Data Analysis
- Operations Schedules

- GWIC is informed?
- GWIC facilitates coordinated solutions?
- GWIC plays a direct and active role?