

$$h(t) = F_+ h_+(t) + F_- h_-(t)$$



Data Analysis Council activities and DA highlights

Andrea Vicere' and M.Alessandra Papa
LSC meeting, 23-26 July 2007, MIT

In this presentation

- * Recommendation for Joint Run planning committee on post-S5 scenarios, relevant to astrowatch program
- * Highlights/thoughts from analysis activities since May meeting
 - Observational papers
 - Integration of DA activities between LSC and Virgo

A lot of progress, tremendous amount of work. Since this is a short talk I will highlight some issues rather than applaud state of progress.

Astrowatch after S5

* Analysis of scenarios (K. Riles, P. Shawhan) compares likelihood of detecting (any) and missing (all) galactic SN events in the next 10 yrs, under different assumptions for:

- waveforms
- detectors upgrade schedules

DAC will discuss these results f2f. All are welcome to attend. Here only a flavour of the types of arguments will be given.

Astrowatch after S5, numbers:

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- Over the next 10-year period, the chance of a supernova going off is about 28% with an average rate of 1 per 30 years. For the pessimistic waveform, the detection efficiency raises from 57% to 79% with the max-coverage run plan. For the optimistic waveform, it raises from 97% to 99%.

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- For the pessimistic waveform, the probability to miss a supernova peaks at about 13% at the end of the AdLIGO/AdVirgo commissioning period with our present default run plan. With the alternative max-coverage run plan that peak probability is about 7%. For perspective, 13% is small, but much larger than the conventional-wisdom probability that we will see anything at all in the S5 run

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- For the pessimistic waveform, the probability to miss a supernova that goes off peaks at about 13% at the end of the AdLIGO/AdVirgo commissioning period with our present default run plan. With the alternative max-coverage run plan that peak probability is about 7%. For perspective, 13% is small, but much larger than the conventional-wisdom probability that we will see anything at all in the S5 run.
- If the optimistic waveform is indeed realistic, then we have much greater margins in our run planning, that is, we are safer in relying upon our less-sensitive interferometers.

Reminder:

*** Meetings of the DAC (Data Analysis Council) are open, as is the DAC mailing list.**

Next meeting: DAC breakfast on wednesday 8:00-9:00 and after DC parallel session 18:00-19:00.

The post S5 run schedule scenarios will be illustrated and discussed in detail then.

<http://www.lsc-group.phys.uwm.edu/ligovirgo/dac/>

<https://workarea.ego-gw.ligo.org/ego2/lsc-virgo/data-analysis-council/>

Misc analysis-related thoughts

Misc analysis - GRB070201

GRB070201 results

- * fast turn-around -- for our standards
- * pretty much pushed limits
- * first real interaction between CBC and burst groups
- * beneficial to do more of it (of both!)

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- * **LSC observational papers are very different in style (not a problem unless it shows that very few people read all papers...)**
- * the Collaborations at large should be more aware of what analysis groups are doing and what choices are made (reason for first DA session: overview of analysis plans and sources)
- * still finding typos in our papers, even in equations: who is supposed to be responsible ?
- * reviews take time, but process needs to be tightened in some aspects
- * also concerned about being satisfied with “high-level” checks. Devil is in details.
- * concerned about constant rush for approval of preliminary results. Eliminate preliminary results so nothing released before paper on gr-qc?

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Observational papers: S3/S4 inspiral paper

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Observational papers: S3/S4 inspiral paper

- * a new kind of paper for the LSC
- * presents observational results only
- * leaves astrophysical interpretation and implementational details to technical papers (with limited authorlists)
 - * moves crucial parts of analysis outside of strictly internal LSC-V domain
 - * you'll hear more in the CBC report session

- * hard to draw line between individual and group contribution when analysis and methods are worked on at the same time.
 - * gives clear recognition and credit to individuals

L-V efforts

L-V efforts

All search groups have both LSC and Virgo active members

- * LSC still busy with data pre-S5
- * Virgo need to look at their data and are concentrating on data quality and veto procedures*
 - * some Virgo groups have been looking at LIGO data, interesting new ideas
 - * searches exploiting L-V data are somewhat lagging behind
 - * need review procedures for presentation of results on LIGO data with Virgo software (and viceversa)
 - * we are still putting in place pretty basic tools, such as the ones that allow software to be visible to all

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*<http://www.cascina.virgo.infn.it/collmeetings/presentations/2007/2007-06/DataAnalysis/>

next

- Catch up with data
- Continually re-assess whether we are doing all the science that we can
- Develop techniques to fully exploit network
- Think about model for S6