

Stack-slide LAL code

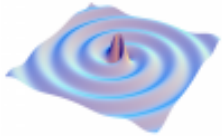
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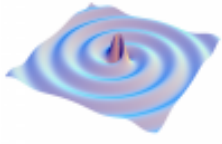
LSC Meeting, 16/08/2000

LIGO-G000212-00-D



Timeline/Progress

Delivery date	Deliverable
15 Dec 1999	lowPassFilter()
15 Jan 1999	slideSpectra() sumSpectra() <i>decide about output signals</i>
15 Feb 2000	applyTDCorrection() getResampledData() implement metric formalism
15 Mar 2000	metric for coarse grid parameters
15 Apr 2000	code for slides per coarse grid point getSearchParameters()
15 May 2000	assemble all task (B) items
15 Jun 2000	test using Gaussian simulated noise
15 Sep 2000	test using 40m or engineering data
15 Oct 2000	<i>discriminants and statistical tools</i>
15 Nov 2000	test: broad area searches
31 Feb 2001	testing complete.



Timeline/Progress (cont'd)

What we promised

what we've got

Low Pass Filter

Generalized filter package

Applying corrections
resampling
sliding
summing

CreateResampleRules()
ApplyResampleRules()
ApplySlideRules()
SumSpectra()

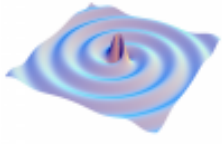
Metric formalism
coarse grid
fine grid

completed
code exists but problems

Testing code
gaussian noise

Not started

- All completed tasks include code, documentation and test routines for inclusion into the LAL.
- **Bottom line: we're about 3 months behind schedule**



Problems with the Metric Formalism

The metric formalism is used to determine fractional loss of S/N due to mismatch between signal and correction parameters.

The implementation of this formalism requires

1. computation of $(n + 1) \times (n + 1)$ matrix $\gamma_{\alpha\beta}$
2. projection of $\gamma_{\alpha\beta}$ into an $n \times n$ matrix according to the rule:

$$g_{ij} = \gamma_{ij} - \frac{\gamma_{0i}\gamma_{0j}}{\gamma_{00}}$$

This projection involves delicate cancellations between the two terms; numerical errors arise in the code as a result.

When we understand the cancellations better, we may be able to rearrange the calculation to remove the numerical problems.

Uncertain how long it will take to overcome this problem. Are working in concert with AEI to understand and overcome it.