



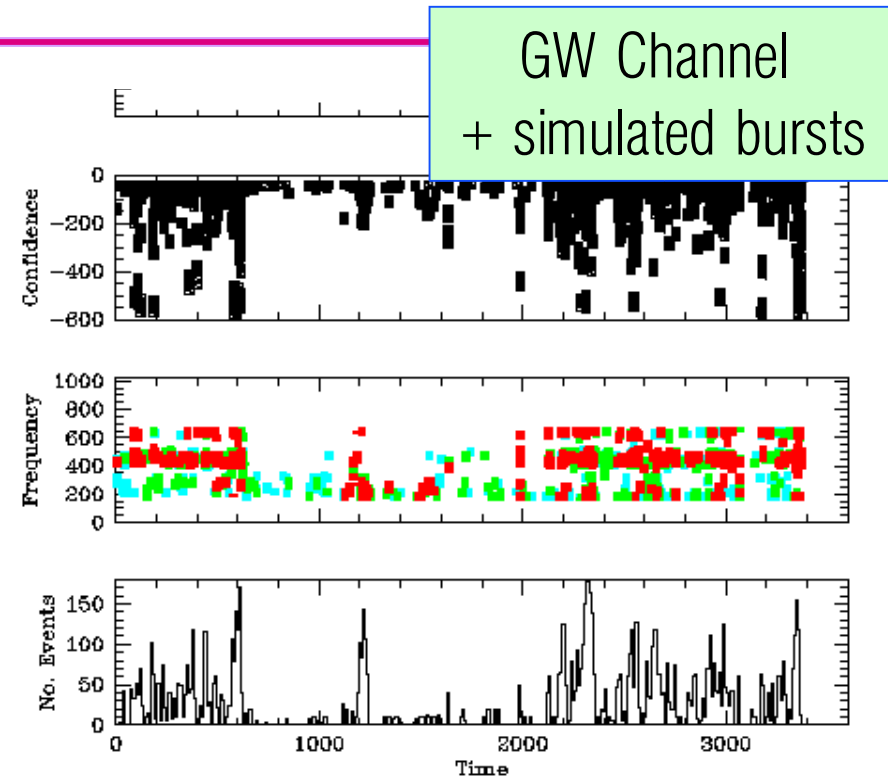
Update on standalone power burst- detection code

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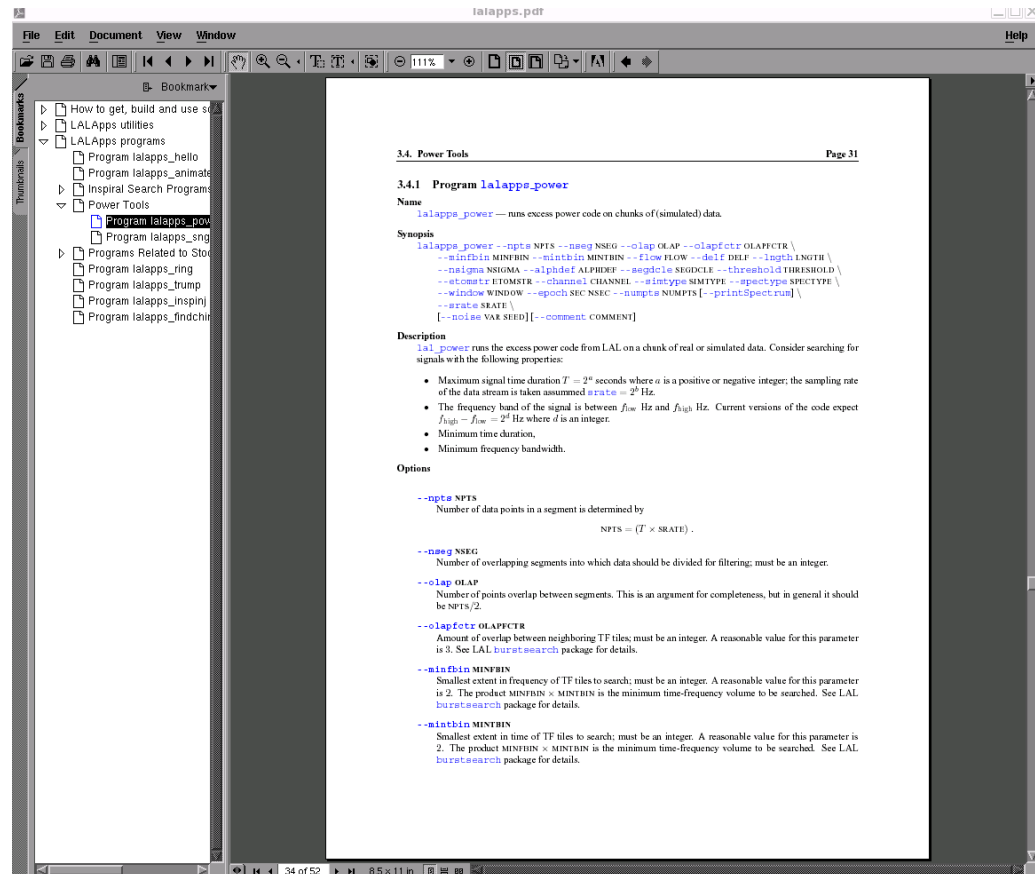
Excess-power method

- Fourier based time-frequency method.
- Calculates time-frequency planes at multiple resolutions
- Computes power in tiles defined by a start-time, duration, low-frequency, frequency band
- Search over all tiles satisfying user supplied criteria for excess power



lalapps_power

- Uses same code base as DSO'
- Need LAL, LALApps, framelib, fftw
- Reads frame data directly; writes LIGO lightweight tables out.
- Uses generic functionality in LAL:
 - » Frame reading interface
 - » Calibration extraction
 - » MetaTable output routines
 - » PSD estimation



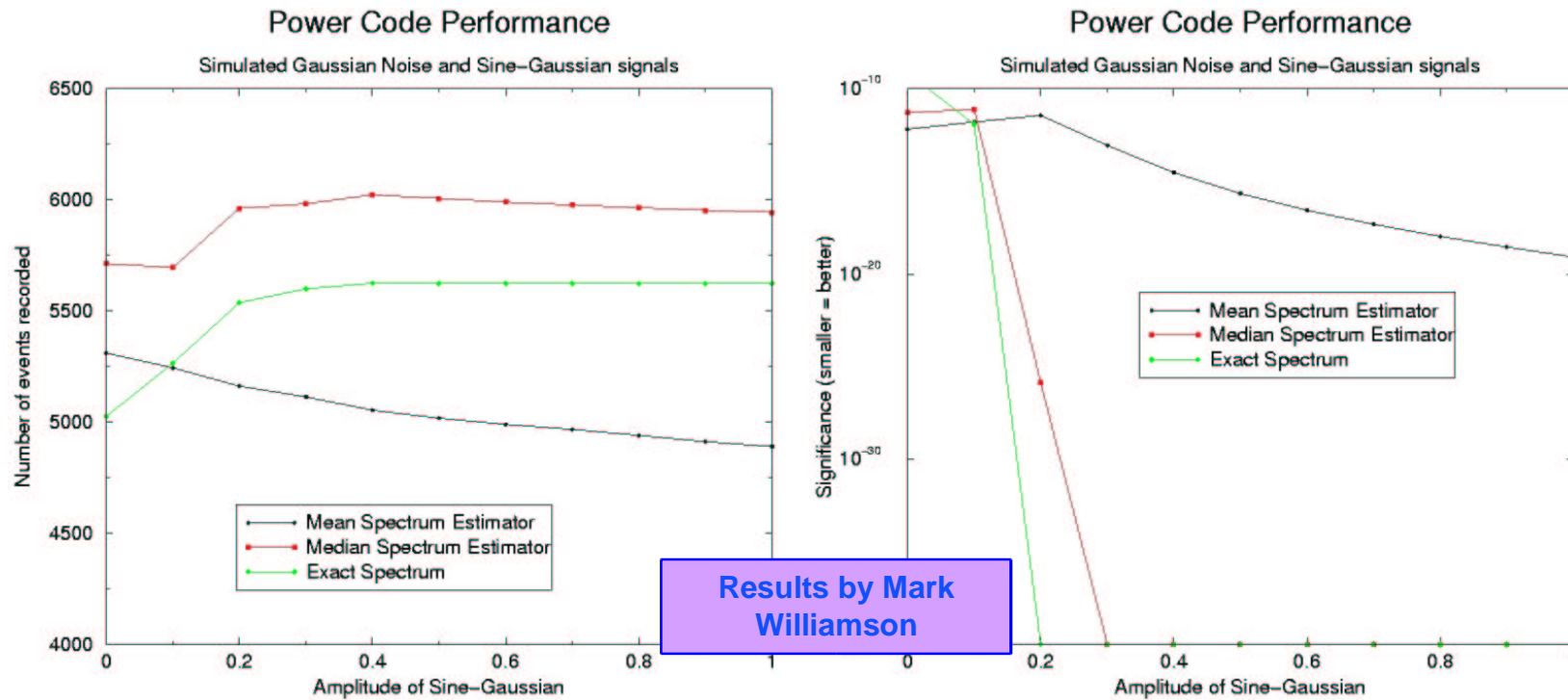
Recent enhancements

- Can limit the max. tile band independently of the band over which to search
- Search algorithm whitens using

$$w(f) = v(f) / \sqrt{S(|f|)}$$

- Uses robust median estimator for power spectrum $S(|f|)$ which
 - » Tracks non-stationarity
 - » Is not biased by non-Gaussian bursts

Mean versus Median Estimators



Running the code

- Can run on desktop reading data from a directory
- Can run under Condor accessing more resources
- Examples of running:

Results by Denny Mackin

 - » H1: 100hrs of playground – 44 mins on medusa
 - » H2: 76 hrs of playground – 26 mins on medusa
 - » L1: 42 hrs of playground – 16 mins on medusa

Concluding remarks

- Standalone power code is available
- Further enhancements are coming soon
- Can be run under Condor to analyze LIGO data
- Denny Mackin Investigations of hardware injections are under way
- Saikat Ray-Majumder Investigations for burst group under way