Templated Binary Inspiral Search Code

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Matched Filtering Code

- `lal/packages/findchirp`
- Filtering code is complete (but not yet documented!)
- Implements matched filtering using stationary phase templates
- Implements chi-squared veto
- Basic testing on time domain generated chirps in gaussian noise complete

Hierarchical Search Engine

- A separate package `chase`
- Coding complete and being tested
- Available on line `http://www.lsc-group.phys.uwm.edu/chase`
- Independent of LDAS
- Web page and documentation soon!

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Template Bank Placement Code

- `lal/packages/bank`
- Coding complete (but not yet documented!)
- Provides functions to generate coarse and fine template banks
- UWM and Cardiff currently working to implement functions in search engine

Waveform Generation Code

- `lal/packages/inspiral`
- Coding complete (but not yet completely documented!)
- Standard Post-Newtonian Waveforms
- Re-summed approximants
- Ready for integration into filtering codes

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Noise Models

- `lal/packages/noisemodels`
- Coding complete and completely documented
- Generates Gaussian noise for each interferometer
- Inject signals into random Gaussian noise
- Simple filtering of noise through a template bank

LDAS Shared Object

- `lalwrapper/contrib/inspiral`
- Initial coding complete (but not yet documented!)
- Provides basic functionality to run flat inspiral search under LDAS
- Run and tested during mpiMDC
- Good place to start for people wanting to write lalwrapper shared object
- See mpiMDC document for more information (in DCC)

More about the LDAS Shared Object

`LALInitSearch()`

- Parses search arguments from the user command
- Sanity checks on arguments
- Allocate memory used in serach
- Call `findchirp` functions to initialize search

`LALConditionData()`

- Parses generic input structure to LAL structures defined in `findchirp`
- Sanity checks on input data
- Call `LALFindChirpSPData()` function to condition data for search

LALApplySearch()

- Implements search engine similar to `chase`
- Search master services search slaves
- Sends template parameters to slaves, receives events from slaves
- Calculates progress information for wrapperAPI
- Converts LAL `InspiralEvent` structure to generic output

LALFinalize Search()

- Call `findchirp` functions to finalize search
- Free memory used in serach

Future Work

- Documentation!
- Complete integration of Cardiff code into search engines
- Scientific testing of filtering code
- Extend shared object to full heirarchical search with better management

Target: Inspiral MDC (May 2001)