LAL Stochastic Background Code:

http://feynman.utb.edu/~joe/research/LAL/

- **List of collaborators**
- **Tasks and milestones**
- **LAL code**
- **Other code we can leverage**
- **Relevant papers, etc.**

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List of collaborators:

The following is a list of people currently developing LAL code for stochastic background searches:

- **AEI Potsdam:**
  - **Alberto Vecchio**
- **Cornell University:**
  - **Steve Drasco**
  - **Eanna Flanagan**
- **Portsmouth, UK:**
  - **Carlo Ungarelli**
- **UT Brownsville:**
  - **Donald Auzmus**
  - **Martha Casquette**
  - **Mario Diaz**
  - **Rosa Luna**
  - **Joe Romano**
  - **Charlie Torres**

Send mail to the group.

Other interested people are also welcome to join. Just send J.D. Romano an e-mail, and we'll add you to the list!

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Milestones for standard CC statistic for SB searches:

Lead group: UT Brownsville
Interested groups: AEI, Cornell, Portsmouth, PSU, UWM

12/99:

- **Learn C and become familiar with LAL standards.**
- **Estimate the number of filters required to search for SB signals having broken power-law spectra.**

03/00:

- **Begin writing LAL code to implement the standard CC statistic.**

06/00:

- **Determine the best way to calculate (approximate??) the optimal filter. Write code to implement this method.**
- **Construct a mesh of filters on the parameter space of SB signals having broken-law power spectra. Write code to implement this filter bank and simulate such signals.**

09/00:

- **Finish code so we can begin testing on simulated and/or real data.**

11/00:

- **Test code on simulated signal + simulated noise for coincident, coaligned detectors. White SB signal, white detector noise. Perform MC simulations and compare with expected analytic results.**
- **Test code on simulated signal + simulated noise for non-coincident, non-coaligned detectors. Broken power-law SB signal, initial LIGO noise.**
- **Test code on simulated signal + REAL noise for coincident, coaligned detectors. White SB signal, real noise from Caltech 40-m or LIGO interferometers. Perform MC simulations and compare with simulated signal + simulated noise results. Determine effect of non-Gaussian noise.**

LAL code:

Function	Description	Status	Author	Date
Overlap	Calculates the values of the overlap reduction function	Finished. Part of current LAL release.	UTB group	18 February 2000
Dirichlet	Calculates the values of the Dirichlet kernel	Finished. Part of current LAL release.	UTB group	18 February 2000
ModelSignal	Models a stochastic background signal	To be written	C. Ungarelli A. Vecchio	??
ModelNoise	Models (or estimates) noise intrinsic to a detector	To be written	??	??
Optimal	Calculates the values of the optimal filter	To be written	??	??
CrossCorr	Calculates the value of the cross-correlation statistic	Under development	S. Drasco	7 March 2000
FilterGrid	Calculates the grid of stochastic background signal parameters	To be written	C. Ungarelli A. Vecchio	??
SimulateSignal	Simulates a stochastic background signal	To be written	C. Ungarelli A. Vecchio	??
SimulateNoise	Simulates noise intrinsic to a detector	To be written	??	??
FalseAlarm	Calculates false alarm versus threshold curves	Under development	UTB group	??
FalseDismissal	Calculates false dismissal versus threshold curves	Under development	UTB group	??
FDismissalVsFAlarm	Calculates false dismissal versus false alarm curves	Under development	UTB group	??
MonteCarlo	Performs Monte Carlo simulations to test the performance of the cross-correlation statistic	To be written	??	??

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