

LIGO Inspiral Characterization

LIGO Inspiral Analysis Workflow

The Laser Interferometer Gravitational Wave Observatory (LIGO) is attempting to detect gravitational waves produced by various events in the universe as per Einstein's theory of general relativity. The LIGO Inspiral Analysis Workflow is used to analyze the data obtained from the coalescing of compact binary systems such as binary neutron stars and black holes. The time-frequency data from any event for each of the three LIGO detectors is split into smaller blocks for analysis. For each block, the workflow generates a subset of waveforms belonging to the parameter space and computes the matched filter output. If a true inspiral has been detected, a trigger is generated that can then be checked with triggers for the other detectors. Several additional consistency tests may also be performed.

Execution Profile

Execution times of Inspiral Analysis jobs			
Job	Count	Mean (s)	Variance
inspiral	76	460.21	297397.45
thinca	14	5.4	0.06
tmpltbank	34	18	0.18
trigbank	42	5.1	0

Sizes of Inspiral Analysis data items			
File Type	Count	Mean (MB)	Variance
in_gwf	64	15	0.00035
in_FAC	3	8	0
in_REF	3	0.86	0
out_INJECTIONS	1	2.3	0
out_TMPLTBANK	34	0.94	0.00033
out_INSPIRAL	76	0.3	0.31
out_TRIGBANK	42	0.012	0.00013
out_THINCA	14	0.032	0.0017