

Project Title:

Searching for binary black holes in advanced LIGO and Virgo data

Supervisor(s):

Prof B Sathyaprakash

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Project Description:

Advanced LIGO began its science run in the autumn of 2015 and we expect Virgo to start taking data in the summer of 2016. This PhD project is aimed at detecting and understanding binary black holes in data from advanced LIGO and Virgo detectors. Binary black holes are fundamentally geometric objects whose interaction close to merger will provide insights into the nature of black hole spacetimes and of gravity in ultra-strong fields.

Coalescing binaries emit gravitational wave signals that are very rich in structure. They contain many harmonics of the fundamental mode as well as modulations caused by black hole spins. The goal of the project is to use a complete model of gravitational waves that includes higher modes and spin-induced precessions to estimate the parameters of the source and to also use such a model in testing strong field predictions of General Relativity.

To discuss this project further, please contact:

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