



Contribution ID: 463

Type: **Talk**

Making waves: modeling gravitational waves from coalescing binary systems

Wednesday, December 16, 2015 9:00 AM (35 minutes)

Gravitational waves were first predicted by Albert Einstein in 1916 on the basis of his theory of general relativity. In the next five years ground-based interferometers, such as advanced LIGO, advanced Virgo and KAGRA, are likely to provide the first direct detections of gravitational waves from binary systems composed of black holes and/or neutron stars. In this talk, we review the progress done over the last several years at developing accurate signal models for the searches, so that we can take full advantage of the discovery potential of the detectors. We also discuss the unique astrophysical and fundamental physics information that we will be able to extract upon detection.

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Session Classification: Plenary talks