



Contribution ID: 113

Type: **Talk**

Sifting the Gravitational-Wave Universe via Multimessenger Astronomy: Forthcoming Prospects for Continuous-Wave detection

Wednesday, 19 October 2016 12:10 (20 minutes)

The upgrade of worldwide gravitational-wave network has led to the first transient gravitational-wave detection, which has started to hone the comprehension we have about our Universe, and some of its constituents. A broader picture would be however provided by the detection of continuous-wave signals, which could be more easily achieved by exploiting the synergy with multimessenger Astronomy. Thanks to electromagnetic observations we may indeed be able to know, with enough accuracy, the sky location, rotational and/or orbital parameters of a broad class of rapidly-rotating neutron stars. This would allow us to perform a multitude of targeted and directed continuous-wave searches, and would facilitate narrow-band searches for the same class of signals. I will describe the prospects for detecting continuous gravitational waves by especially employing novel strategies for neutron stars in binary systems directed to sources whose parameters have been electromagnetically estimated. Employing those methods to analyze data from the ever-more-sensitive advanced detectors will remarkably increase the chances of a continuous wave detection.

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Session Classification: Gravitational Waves and the other messengers

Track Classification: Gravitational Waves