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Type: Review

From neutron stars to supermassive black holes: the gravitational wave view of compact binaries.

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Recent gravitational wave (GW) detections with LIGO/Virgo opened a new window on the Universe, unveiling the most violent catastrophic events in the cosmos. GW astronomy is just in its infancy, 3G detectors will extend our capabilities to observe colliding black holes and neutron stars from the ground, and the Laser Interferometer Space Antenna (LISA) and Pulsar Timing Arrays (PTAs) will offer a complementary view of the GW universe in a much more extended range of frequencies, from mHz down to nHz, probing the whole mass spectrum of astrophysical black holes. After introducing the current successes of LIGO-Virgo, I will discuss the status and science objectives of 3G interferometers, LISA and PTA, their targeted sources and the multi-messenger science they will enable in the future decades.

Topic

Multi-messenger and transient astronomy

Affiliation

Università di Milano Bicocca

Primary author: Prof. SESANA, Alberto (Universita' di Milano Bicocca)
Presenter: Prof. SESANA, Alberto (Universita' di Milano Bicocca)
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