



Contribution ID: 66

Type: **Invited Talk**

The Future of Gravitational-Wave Astronomy

Thursday, 19 September 2024 09:00 (55 minutes)

Since the groundbreaking first detection of gravitational waves (GWs) from merging black holes and neutron stars in 2015, current ground-based GW detectors have identified around 100 such events. These discoveries have unveiled the mass and spin distributions of stellar-mass black holes, provided new insights into the behavior of superdense matter, and offered an independent measurement of the Universe's expansion rate.

The next-generation ground-based GW detectors will achieve a tenfold increase in sensitivity, extending our reach to far greater cosmological distances. Complementing this, the European Space Agency's adoption of the proposed space-based mission LISA will allow us to explore a broader range of frequencies and uncover entirely new GW sources. Together, these instruments will enable some of the most precise tests of the laws of physics across various scales.

In this talk, I will explore the scientific potential of upcoming GW detectors like the Einstein Telescope and Cosmic Explorer, while also touching on space-based detectors and specialised high-frequency detectors.

Primary author: SCHMIDT, Patricia (University of Birminham)

Presenter: SCHMIDT, Patricia (University of Birminham)

Session Classification: Gravitational Waves

Track Classification: Gravitational waves