

Seminarium Astrofizyczne

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Listening to Einstein's Universe: the Dawn (and Exciting Future) of Gravitational-Wave Cosmology

It is now more than five years since the first confirmed detection of gravitational waves was announced by the LIGO and Virgo collaborations and the new field of gravitational-wave astronomy is growing rapidly – with a total of 50 confident detections now announced by LIGO and Virgo in their GWTC-2 catalog, published in autumn 2020. There has also been significant focus on the prospects for using so-called “standard sirens” as cosmological probes, with the “flagship” binary neutron star merger GW170817 already providing an important first demonstration of the efficacy of standard sirens for estimating the Hubble parameter.

In this talk I will briefly discuss the basic ideas that underpin gravitational-wave sirens as cosmological probes, discuss the results achieved so far – from analysis of both “bright” and “dark” sirens detected by LIGO and Virgo in their initial observing runs – and explore the opportunities and challenges for constraining cosmological parameters and testing cosmological models using gravitational-wave sources observed by future generations of ground- and space-based detectors.

Serdecznie zapraszam,
Agnieszka Majczyna