Extreme matter meets extreme gravity: Compact objects as laboratories for fundamental physics (SYPS)

gemeinsam veranstaltet
vom Arbeitskreis „Junge DPG“ (AKjDPG)
und den Fachverbänden
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The landmark detections of gravitational waves from binary black-hole and neutron-star systems has ushered in a new era in astronomy. These novel observations not only improve our understanding of compact objects in astrophysics, but they also illuminate fundamental physics from an entirely different perspective. This research requires a multidisciplinary effort from across the scientific communities of gravity, astrophysics, particle physics, nuclear physics, and cosmology. With this symposium, we wish to encourage the exchange of ideas between researchers in different fields.

The first part of the symposium demonstrates a novel way in which gravitational-wave science could impact research in particle physics and cosmology. It focuses on ultra-light bosons, which are dark-matter candidates in certain extensions of the Standard Model, and on the phenomenon of superradiance. In the second part, we turn our attention to neutron-star systems and their rich multi-messenger signals. Binary neutron stars tidally deform as they coalesce and the tidal effects encode information about the equation of state of dense nuclear matter in a regime inaccessible to laboratories on Earth. All talks are structured so that they provide the necessary background to follow recent advances in gravitational-wave science.

Übersicht der Hauptvorträge und Fachsitzungen

(HS 5)

Hauptvorträge

SYPS 1.1	Mi	15:00–15:40	HS 5	**Black-hole superradiance: Probing ultralight bosons with compact objects and gravitational waves** — •Paolo Pani
SYPS 1.2	Mi	15:40–16:10	HS 5	**Modelling and analyzing a binary neutron-star merger: Interpreting a multi-messenger picture** — •Tim Dietrich
SYPS 1.3	Mi	16:10–16:40	HS 5	**What can neutron-star mergers reveal about the equation of state of dense matter?** — •Ingo Tews

Fachsitzungen

SYPS 1.1–1.3	Mi	15:00–17:00	HS 5	**Extreme matter meets extreme gravity**