

# Nuclear Astrophysics in the new era of multi-messenger Astronomy

Neutron stars are unique cosmic laboratories for the exploration of matter under extreme conditions of density and neutron-proton asymmetry. Due to their enormous dynamic range, neutron stars display a myriad of exotic states of matter that are impossible to recreate under normal laboratory conditions. In this presentation I will discuss how the combination of nuclear physics insights together with modern theoretical approaches pave the way to our understanding of these fascinating objects. Finally, connections will be made to the historical first detection of gravitational waves from the binary neutron-star merger GW170817.

## Summary

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