

GSI - FAIR Colloquium

Main Lecture Hall (SB1 1.120), 64291 Darmstadt, Planckstraße 1

*Tuesday, June 7, 2016,
16:15 Uhr (Tee ab 15:45)*

Pre-colloquium for students at 15:30

*Luciano Rezzolla
Goethe Universität Frankfurt*

The physics and astrophysics of merging neutron-star binaries

The gravitational waves from the merger of a binary black-hole system have just been detected, opening a new window on the universe. I will review the theoretical work in numerical relativity that has made this discovery possible and argue that if black holes represent one the most puzzling results of Einstein's theory of gravity, neutron stars in binary system are arguably its richest laboratory, where gravity blends with astrophysics and particle physics. I will discuss the rapid recent progress made in modelling these systems and show how the dynamics of a binary of magnetized neutron stars leads to a rapidly-spinning black hole surrounded by a hot and highly-magnetized torus. I will also discuss how the detection of gravitational-wave from these systems will allow us to infer the properties of the equation of state for matter at nuclear densities, and possibly model short gamma-ray bursts.

Einladender: Bengt Friman

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