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Exploring magnetic field geometry in binary neutron stars: Implications for short gamma-ray bursts

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In 2017, the coordinated detection of gravitational waves by three interferometers (event GW170817) made it possible to triangulate the position of the source and therefore look for electromagnetic signals in that area of the sky. This detection was followed by a multitude of electromagnetic signals, including a short-gamma ray burst and a kilonova. These combined detections paved the way for a new era of multi-messenger astronomy, allowing us to gather more data about the sources and thus better understand the physics that governs them. It is believed that these signals originated from a binary system of neutron stars (BNS). To properly understand the data, fully relativistic, magnetohydrodynamic (GRMHD) numerical studies are necessary. In this seminar, I will present the state-of-the-art of GRMHD simulations of BNS and explore the interplay between magnetic field geometry and the formation of jets that can explain short gamma-ray bursts.

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Clasificación de la sesión : Morning Session