Seventeenth Marcel Grossmann Meeting



Contribution ID: 570

Type: Talk in a parallel session

Protoneutron star dynamos and magnetar formation

Thursday, 11 July 2024 15:30 (30 minutes)

Magnetars are isolated young neutron stars that exhibit the most intense magnetic fields known in the Universe and are characterized by a wide variety of high-energy emissions. The birth of rapidly rotating magnetars is also a promising scenario to power outstanding explosive transients. The formation process of these objects, as well as the origin of their ultra-strong magnetic fields, remains an open question, but the amplification of magnetic fields by MHD instabilities inside protoneutron stars seems inevitable. I will review the different dynamo scenarios that can explain magnetar formation, focusing on recent progress achieved with 3D-MHD HPC simulations, and discuss them in light of various observational constraints.

Primary authors: Dr REBOUL-SALZE, Alexis (AEI); Dr GUILET, Jérôme (CEA); Dr BUGLI, Matteo (UniTO); Dr BARRÈRE, Paul (CEA); RAYNAUD, Raphaël (UPCité)

Presenter: RAYNAUD, Raphaël (UPCité)

Session Classification: Galactic and extragalactic magnetars: recent observations and theoretical

progress

Track Classification: Compact Objects and Stellar Evolution (CO): Galactic and extragalactic magnetars: recent observations and theoretical progress