ID de Contribution: **9**   Type: **ÉTOILES A NEUTRONS, SUPERNOVÆ ET SYNTHÈSES DES ÉLÉMENTS LOURDS**

Maximum mass of compact stars from gravitational wave events with finite-temperature equations of state

mardi 12 octobre 2021 13:15 (15 minutes)

In this talk, I will discuss relations between global parameters of hot and fast-rotating compact stars which do not depend on the equation of state, including a relation connecting the masses of the mass-shedding (Kepler) and static configurations. These relations will then be applied to the GW170817 event by adopting the scenario in which a hypermassive compact star remnant formed in a merger evolves into a supramassive compact star that collapses into a black hole once the stability line for such stars is crossed. An upper limit is deduced on the maximum mass of static, cold neutron stars for the typical range of entropy per baryon and electron fraction characterizing the hot hypermassive star. Our result implies that accounting for the finite temperature of the merger remnant relaxes previously derived constraints on the value of the maximum mass of a cold, static compact star.

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Classification de Session: Groupe de Travail: Etoiles à neutrons, supernovae et synthèse des éléments lourds