

# Exploring neutron star's glitches with rotating supersolids

*Wednesday 1 October 2025 11:00 (20 minutes)*

We investigate features of neutron stars glitches employing rotating dipolar supersolids. Understanding the rotational dynamics of such systems sheds light on the behavior of vortices in density-modulated superfluids. We demonstrate that supersolid rotation arises from two distinct flow components: one associated with vortices and another with a curl-free (irrotational) velocity field. At higher rotation frequencies, the curl-free component counteracts the overall rotation, contributing angular momentum that is anti-aligned with that of the vortices. This mechanism suggests that, in neutron stars, the total angular momentum is not solely determined by vortex dynamics but results from the combined contributions of both flow components.

**Author:** TRABUCCO, Silvia (Gran Sasso Science Institute)

**Presenter:** TRABUCCO, Silvia (Gran Sasso Science Institute)

**Session Classification:** Short contributions (I)