

# Dark Matter and Stars: Multi-Messenger Probes of Dark Matter and Modified Gravity

Contribution ID: 81

Type: **not specified**

## Smoking gun signals of dark matter in compact stars

*Thursday, 4 May 2023 11:40 (10 minutes)*

We present here the smoking-gun signals of the presence of dark matter (DM) in compact stars, such as neutron stars (NSs). We demonstrate the conditions under which the DM particles tend to form a compact core or a diluted halo embedding the NS. At the same time, we point out the possible degeneracy between the effect of accumulated DM and the deconfinement phase transition in the core of the star. Both configurations lead to the effective softening of the equation of state and could mimic each other. Moreover, we show the impact of DM on the star thermal evolution and properties, e.g. mass, radius, tidal deformabilities, and its possible detection with the present and future multi-messenger observations.

**Primary authors:** PROVIDÊNCIA, Constança; GIANGRANDI, Edoardo (CFisUC - University of Coimbra); IVANYT-SKYI, Oleksii (University of Wrocław); DIETRICH, Tim (Nikhef); Dr SAGUN, Violetta (University of Coimbra)

**Presenter:** GIANGRANDI, Edoardo (CFisUC - University of Coimbra)