Contribution ID: **93** Type: **Poster**

Neutron star cooling within the equation of state with induced surface tension

We study the thermal evolution of neutron stars described within the equation of state with induced surface tension (IST) that reproduces properties of normal nuclear matter, fulfills the proton flow constraint, provides a high-quality description of hadron multiplicities created during the nuclear-nuclear collision experiments, and is equally compatible with the constraints from astrophysical observations and the GW170817 event. The model features strong direct Urca processes for the stars above 1.91 Msun. The IST equation of state shows a very good agreement with the available cooling data, even without introducing nuclear pairing. We also analysed an effect of the singlet proton/neutron and triplet neutron pairing on the cooling of neutron stars of different mass. We demonstrate a full agreement of the predicted cooling curves with the experimental data. Moreover, the IST EoS provides a description of Cas A with both paired and unpaired matter.

Primary authors: STEFANOS, Tsiopelas; SAGUN, Violetta (University of Coimbra)

Presenter: SAGUN, Violetta (University of Coimbra)

Session Classification: COMPACT STARS, DM, DE, GWs, ϒ RAYS, QGP, QCD, HIC, SNOVAE, BHs, PARTICLES, GALAXIES