## PHAROS Conference 2020: The multi-messenger physics and astrophysics of neutron stars



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## Modeling the cooling phase of proto neutron stars

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The formation of neutron stars is an extremely complex problem involving many field of physics : general relativity, relativistic fluid mechanics, nuclear matter equation of state, neutrino-matter interactions...

This diversity makes neutron stars the ideal target for the era of multimessenger astronomy, but progress has to be made also on the theoretical aspects of the problem.

In this talk I will present recent work regarding the early evolution of the proto-neutron star when it is still very fast cooling due to neutrino emission. A newly developed simulation code will be shown and the influence on the simulations of accurate cross sections for neutrino-matter interactions that have been computed using RPA (random phase approximation) will be discussed.

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