

Hyperons and neutron stars

Tuesday 28 June 2022 09:20 (25 minutes)

In this talk we will review the present status of the role played by hyperons in determining the properties of neutron and proto-neutron stars. In particular, we review the so-called “hyperon puzzle”, i.e., the problem of strong softening of the equation of state of dense matter due to the presence of hyperons which leads to maximum masses of compact stars that are not compatible with the recent observations of about 2 solar mass millisecond pulsars. We discuss some of the solutions that were proposed to tackle this problem. We also re-examine the influence of hyperons on the cooling of newly born neutron stars as well as on the development of the r-mode instability. We discuss also the effect of hyperons on transport properties including the thermal conductivity, the shear viscosity and the momentum transfer rates.

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Session Classification: 2; Tue-I