

The Structure and Signals of Neutron Stars, from Birth to Death



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The symmetry energy and neutron star properties

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The effect of the symmetry energy on several properties of neutron stars is discussed. First, we analyze the effect of the symmetry energy on the pasta phase. It is shown that the size of the pasta clusters, number of nucleons and the cluster proton fraction depend on the density dependence of the symmetry energy: a small L gives rise to larger clusters. The influence of the equation of state at subsaturation densities on the extension of the inner crust of the neutron star is also discussed. We then discuss effect of the density dependence of the symmetry energy on the strangeness content of neutron stars. It is found that charged (neutral) hyperons appear at smaller (larger) densities for smaller values of the slope parameter

L . A linear correlation between the radius and the strangeness content of a star with a fixed mass is also found. Finally we analyse the effect of the symmetry energy on the evolution of a proto-neutron star with a kaon condensate.

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