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Strangeness in Compact Stars

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In the dense interior of compact stars the composition might change considerably. Due to weak equilibrium in neutron star matter particles carrying strangeness can appear changing the overall global properties as well as the transport properties of compact stars. The new pulsar mass limit of two solar masses gives new information on the presence of strange matter in the core of compact stars. New degrees of freedom, as strangeness, usually soften the nuclear equation of state, thereby reducing the maximum mass possible. Certain classes of microscopic models including hyperons face the problem that the maximum mass is well below the two solar mass limit, which is the so called 'hyperon puzzle', while other nuclear models describing hypernuclear properties result in neutron star masses of two solar masses or more. As a possible reconciliation of the hyperon puzzle, the presence of strange quark matter stabilizing the core of neutron stars have been invoked. The implications of the new pulsar mass limit on the parameters of the hypernuclear models as well as of quark matter models will be discussed in the presentation.

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