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Studying the effects of the symmetry energy in hybrid stars

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In this contribution we consider hybrid compact stars located in the third branch of the corresponding mass-radius diagram. We introduce a set of equations of state whose symmetry energy parameters vary. These are described by multi-polytropes and by a RMF model with several isovector mesons, fulfilling laboratory constraints. We find correlations between tidal deformabilities, stellar radii and symmetry energy parameters. Properties for the crust of hybrid stars in relation to the pure hadronic configurations are derived. Astrophysical applications include derivations of the properties of rotating compact stars and their moment of inertia as well as estimates of the energy released in evolutionary transitions from hadron to hybrid configurations. Moreover, state-of-the-art neutron star observations are used to constrain the space of parameters of the models used in this work.

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