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# Tidal Deformability, Phase Transitions and Stiffness of the Nuclear Equation of State

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We explore the connection between the stiffness of an hadronic equation of state with a sharp phase transition to quark matter to its tidal deformability. To this end we employ a hadronic relativistic mean field model with a parameterized effective nucleons mass to vary the stiffness in conjunction with a constant speed of sound EoS for quark matter. We compute multiple scenarios with phase transitions according to the four possible cases of a hybrid star EoS with a stable second branch. We demonstrate at the example of GW170817 how the effective nucleon mass can be constrained by using gravitational wave data. We find, that certain values of the effective nucleon mass are incompatible with GW170817 and a phase transition simultaneously.

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