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## Constraining quark matter inside hybrid stars

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The existence of quark matter inside the cores of massive neutron stars is supported by many recent studies. We model hybrid stars using the extended linear sigma model – which reproduces vacuum quantities and finite temperature behaviour accurately – to describe quark matter, together with various hadronic models. We show that crossover phase transitions between the hadronic and quark phases can naturally create equations of state that are stiffer than both the hadronic and quark ones, enabling more massive neutron stars. We also show that the properties of the maximum mass hybrid star can be used to constrain the parameters of the quark model, while radius limits from GW170817 also give restraints on them. Preliminary results from a Bayesian analysis are also shown.

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