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## Equations of state for neutron stars with phase transitions of different orders

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In this contribution, we describe new chemically-equilibrated charge neutral hybrid equations of state for neutron stars. They present a phase transition to deconfined quark matter and are differentiated by the particle population considered and how these particles interact. While some equations of state contain just nucleons and up, down-quarks, others also contain hyperons, Delta baryons, and strange quarks. The hybrid equations of state, together with corresponding hadronic ones, are available on the CompOSE repository and can be used for different astrophysical applications. Besides studying first-order phase transitions, we also explore the possibility of higher-order phase transitions and investigate possible astrophysical implications, e.g., for neutron-star mergers.

[1] Equations of state for neutron stars with phase transitions of different orders  
A. Clevinger, M. Albino, V. Dexheimer, P. Hammond, D. Radice, C. Providencia  
In-preparation.

[2] Hybrid Equations of State for Neutron Stars with Hyperons and Deltas  
A. Clevinger, J. Corkish, K. Aryal, V. Dexheimer  
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### Category

Theory

### Collaboration (if applicable)

NP3M

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