



Contribution ID: 291

Type: Oral presentation

## Bayesian analysis for extracting properties of the nuclear equation of state from observational data

*Saturday, July 7, 2018 5:30 PM (30 minutes)*

A Bayesian analysis of new hybrid nuclear equation of state models with quark-hadron pasta phase is performed using modern observational data of compact stars including those from the binary neutron star merger GW170817 [1]. The hybrid stellar models are based on a RMF model of the hadronic phase [2] and a relativistic density functional approach to the quark matter phase [3]. The occurrence of pasta phases in the transition from hadronic to quark matter is mimicked by a simple parabolic model for pressure versus chemical potential in the mixed phase region [4,5]. This provides additional pressure relative to a Maxwell construction as a finite size effect of the structures in the mixed phase. The preliminary analysis of the chosen class of hybrid models demonstrates that the most probable phase transition density is around twice the nuclear saturation density.

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2. M. A. R. Kaltenborn, N.-U. F. Bastian, and D. B. Blaschke, Phys. Rev. D 96, 056024 (2017)
3. K. A. Maslov, E. E. Kolomeitsev and D. N. Voskresensky, Nucl. Phys. A 950, 64 (2016).
4. A. Ayriyan and H. Grigorian, Eur. Phys. J. WoC 173, 03003 (2018)
5. A. Ayriyan, N.-U. Bastian, D. Blaschke, H. Grigorian, K. Maslov, and D. N. Voskresensky, Phys. Rev. C 97, 045802 (2018)

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**Session Classification:** Special session on Astro-Cosmo-Gravity