

# The Modern Physics of Compact Stars and Relativistic Gravity

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## Mass-radius constraints for compact stars and the QCD phase diagram

We suggest a new Bayesian analysis using disjunct M-R constraints for extracting probability measures for cold, dense matter equations of state. One of the key issues of such an analysis is the question of a deconfinement transition in compact stars and whether it proceeds as a crossover or rather as a first order transition. The latter question is relevant for the possible existence of a critical endpoint in the QCD phase diagram under scrutiny in present and upcoming heavy-ion collision experiments.

**Author:** BLASCHKE, David (University of Wroclaw)

**Co-authors:** Dr ALVAREZ-CASTILLO, David Edwin (JINR Dubna); Dr KLAHN, Thomas (University of Wroclaw)

**Presenter:** BLASCHKE, David (University of Wroclaw)