

APCTP SEMINAR

Towards Holographic Neutron Stars

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IPhT - CEA - Paris, Saclay

September 30th (Thu.) 16:00 (KST)

Online via ZOOM

In this talk I review the recent construction of holographic baryonic matter with isospin asymmetry, including fully dynamically its interplay with pion condensation. To this end, I work within the holographic Witten-Sakai-Sugimoto model and use the so-called homogeneous ansatz for the gauge fields in the bulk to describe baryonic matter. I map out the phase structure in the presence of baryon and isospin chemical potentials, showing that for sufficiently large chemical potentials condensed pions and isospin-asymmetric baryonic matter coexist. I also present first results of the same approach in the deconfined geometry and demonstrate that this case, albeit technically more involved, is better suited for comparisons with and predictions for real-world QCD. This includes some encouraging comparisons with lattice studies at nonzero isospin chemical potential. Finally, in the final part of the talk I will present some preliminary results on applying our model to the description of charge neutral, beta-equilibrated matter in compact stars, including the construction of a holographic crust, the computation of realistic mass-radius curves and tidal deformabilities consistent with the current phenomenological constraints.

■ ZOOM Webinar

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