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Reaching percolation and conformal limits in neutron stars

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In this talk, I discuss the statistically determined equation of state of dense matter that fulfills the multimes-senger constraints and determine the properties of dense matter found in neutron stars. I demonstrate that the speed of sound and trace anomaly are driven towards their conformal values at the center of maximally massive NSs. I argue that the local peak of the speed of sound is located at values of energy and particle densities consistent with deconfinement and percolation conditions in QCD matter. I also analyze fluctuations of the net-baryon number density in the context of possible remnants of critical behavior.

talk based is on:

M. Marczenko, L. McLerran, K. Redlich, C. Sasaki, Phys.Rev.C 107 (2023) 2, 025802

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