

## Gravitational form factors of nucleons in the scale-Invariant chiral effective theory (invited talk)

*Wednesday, April 2, 2025 4:30 PM (30 minutes)*

Elucidating the mechanisms by which quarks and gluons are confined within hadrons is one of the most fundamental challenges in QCD. Addressing this problem requires an understanding of the role of non perturbative properties, such as chiral and gluon condensates, as well as the associated spontaneous and anomaly-induced symmetry breaking, in hadron formation. Recently, the stress distribution inside the proton has become experimentally measurable through its extraction from gravitational form factors, which characterize the matrix elements of the energy-momentum tensor for the proton. This stress distribution directly represents the forces that confine quarks and gluons within hadrons, providing a new perspective on this fundamental problem. In this talk, I will discuss the gravitational form factors and stress distributions of nucleons using the extended Skyrme model, which faithfully incorporates the properties of not only chiral symmetry but also scale symmetry in QCD. In particular, I will investigate how the scale anomaly contributes to the pressure distribution inside the nucleon and discuss its crucial role in ensuring nucleon stability.

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