

# XVth Quark Confinement and the Hadron Spectrum



Contribution ID: 84

Type: Oral

## Gravitational form factors of the nucleon and their mechanical structure: Twist-2 case

*Wednesday 21 August 2024 17:30 (20 minutes)*

We present a talk on recent investigations of the gravitational form factors (GFFs) and relevant mechanical structure of the nucleon, focusing also on the flavor components of the GFFs. We employ a pion mean-field approach, grounded in the large  $N_c$  limit of Quantum Chromodynamics (QCD). We mainly consider the contributions from the twist-2 operators to the flavor-triplet and octet GFFs. We perform the flavor decomposition of the mass, angular momentum, and D-term form factors of the nucleon. We find that the strange quark contributions are found to be mild for the mass and angular momentum of the nucleon while providing significant corrections to the D-term form factor. We discuss a significant contribution from the effects of twist-4 operators. The gluonic contributions are suppressed by the packing fraction of the instanton vacuum in the twist-2 case, but those from twist-4 operators are of order unity, so its explicit consideration is required.

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**Session Classification:** Light Quarks

**Track Classification:** B: Light Quarks