ID de Contribution: **160** Type: **Seminar**

Quantum stress on the light front

mardi 19 septembre 2023 17:00 (20 minutes)

We investigate the gravitational form factors of a strongly coupled scalar theory in the light front Hamiltonian approach. The theory can be used to mimic the non-perturbative interaction between the nucleon and the pion. We renormalize the energy-momentum tensor with a Fock sector dependent scheme. We also systematically analyze the Lorentz structure of the energy-momentum tensor and identify the suitable hadron matrix elements to extract the form factors, avoiding the contamination of spurious contributions. We present results up through the 3-parton Fock sector (i.e bare mock nucleon plus up to two mock pions) for the gravitational form factors of the mock nucleon at strong coupling and over a large range of four-momentum transfer squared. We verify that the extracted form factors obey momentum conservation as well as von Laue's mechanical equilibrium condition. From the gravitational form factors, we compute the energy and pressure distributions of the system. Furthermore, we show that utilizing the Hamiltonian eigenvalue equation, the off-diagonal Fock sector contributions from the interaction term can be converted to diagonal Fock sector contributions, yielding a systematic non-perturbative light-front wave function representation of the energies and forces inside the system.

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