Contribution ID: 472

Type: Oral

Deuteron gravitational form factors, generalized parton distributions, and charge density in the framework of the soft-wall AdS/QCD model

Wednesday 2 July 2025 17:50 (20 minutes)

We study gravitational deuteron form factors (GFF) and generalized parton distributions (GPDs) within the soft-wall AdS/QCD model, where deuteron is described by the bulk vector field with twist $\tau = 6$. For finite-temperature studies, we apply the soft-wall model, which is thermalized by introducing a thermal dilaton field. The GPDs and charge density are considered in impact parameter (IP) space and at zero and finite temperatures. We plotted the temperature dependence of these quantities in the IP space and observe a decrease in their peaks as the temperature increases. The gravitational root mean square radius obtained here is close to the range given by experimental data for the mass radius and has low sensitivity to the temperature.

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Session Classification: 4. Relativistic nuclear physics, high-energy and elementary particle physics: Theory

Track Classification: Section 4. Relativistic nuclear physics, high-energy and elementary particle physics.