

XXV International Baldin Seminar on High Energy Physics Problems  
"Relativistic Nuclear Physics and Quantum Chromodynamics"



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## On GPDs of spin-3/2 particles and electromagnetic and gravitational form factors

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The generalized parton distribution functions (GPDs) of spin-3/2 particles are given [1]. Sum rules of those GPDs and structure functions of the systems are obtained. As a typical example, we numerically calculate the electromagnetic and gravitational form factors of the spin-3/2 baryon (like  $\Delta$  or  $\Omega$ ) by using a quark-diquark approach [2-4]. Lattice calculation results are considered to constrain our model parameters. Our study gives a reasonable description for the electromagnetic and mechanical properties of the spin-3/2 particle.

[1] Dongyan Fu, Baodong Sun, and Yubing Dong, Phys. Rev. D106 (2022), 116012, arXiv:2209.12161.

[2] Dongyan Fu, Baodong Sun, and Yubing Dong, Phys. Rev. D105 (2022), 096002, arXiv:2201.08059.

[3] Dongyan Fu, Baodong Sun, and Yubing Dong, Phys. Rev. D107 (2023), 116021, arXiv:2305.02680.

[4] Dongyan Fu, Jiaqin Wang and Yubing Dong, "Form factors of  $\Omega^-$  in a covariant quark-diquark approach", arXiv:2306.04869.

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