

## Baryon-antibaryon generalized distribution amplitudes

Baryon-antibaryon generalized distribution amplitudes (GDAs) give an access to timelike gravitational form factors (GFFs) which are complementary to the spacelike ones which can be deduced from the hadronic generalized parton distributions (GPDs) measured in deep exclusive electroproduction processes. They allow to probe the GFFs of unstable baryons in the baryon octet, since the second moments of hadronic generalized distribution amplitudes (GDAs) lead to the timelike GFFs. These GDAs can be measured in the process  $e^+e^- \rightarrow B\bar{B}\gamma$ , in the generalized Bjorken regime where the invariant mass of the  $B\bar{B}$  pair is near threshold at high energy facilities, such as BESIII, Belle II, and the proposed Super Tau-Charm Facility. In this work, we investigate this process using the QCD collinear factorization framework, where the scattering amplitudes are expressed in terms of the baryon timelike electromagnetic (EM) FFs and Compton FFs. We also provide a numerical estimate of the cross sections with a model for baryon-antibaryon GDAs. Our work provides us a possibility to extract the timelike baryon GFFs from near future experimental measurements, and these GFFs may be further used to study longstanding questions in hadronic physics such as the baryon spin decomposition and D-term.

Reference: Jing Han, B. Pire and Qin-Tao Song, arXiv:2506.09854 [hep-ph].

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