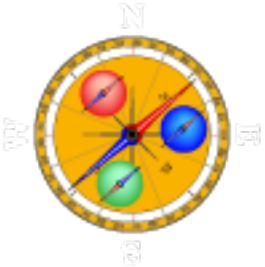

Contribution ID: **90** Type: **not specified**

Determination of generalized distribution amplitudes from experimental measurements

Tuesday, 12 December 2017 13:05 (20 minutes)

In order to understand the origin of proton spin, it is necessary to probe contributions from partonic orbital angular momenta. Recently, the generalized parton distributions (GPDs) have been investigated to find the partonic orbital-angular-momentum contributions. The GPDs contain information on form factors and parton distribution functions, and they are investigated by the deeply virtual Compton scattering (DVCS). By taking the s-t crossing channel of DVCS, the generalized distribution amplitudes (GDAs) can be studied in the two-photon process γγ⟶*h hbar which is accessible at KEKB. In 2016, the Belle collaboration reported measurements for the differential cross section on the process* γγ⟶ π^0π^0 in the e^+e^− collision. The pion GDAs should be obtained by analyzing these Belle data. In our analysis, the resonance effects, especially from scalar and tensor mesons f0(500) and f2(1270), are considered to explain the Belle data in addition to the GDA continuum contributions. The GDAs are expressed by a number of parameters, which are determined by a χ^2 analysis. Then, the form factors of the energy-momentum tensor are calculated from the pion GDAs. This is the first finding on gravitational form factors and radii of hadrons from actual experimental measurements: we obtained the mass radius (0.56-0.69 fm) and the mechanical radius (1.45-1.56 fm). In 2018, Belle II will begin to collect data with the upgraded SuperKEKB, so that the errors of the γ*γ⟶ π^0π^0 cross sections should be significantly reduced and that the GDAs of other hadrons can also be investigated. Our studies are valuable in understanding the 3D structure and gravitational properties of hadrons.

Primary authors: TERYAEV, Oleg (JINR); SONG, Qin-Tao (Sokendai/KEK); KUMANO, Shunzo (KEK)

Presenter: SONG, Qin-Tao (Sokendai/KEK)

Session Classification: Session II-b