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Title: GDH Sum rule test of Deuteron from Photodisintegration below 20 MeV using HIFROST at Duke HI $\gamma$ S facility

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#### Abstract

The Collaboration measures the integrand of the GDH integral for the deuteron below 20 MeV. Mono-energetic and polarized intensive gamma rays produced by HI $\gamma$ S at Duke Free Electron Laser Laboratory are incident on longitudinally polarized deuteron target, using HIFROST. Neutrons from photodisintegration reaction on the deuteron target are detected by 88 BC505 liquid scintillators, which cover  $\frac{1}{4}$  of  $4\pi$ . This is the first experiment using the polarized target at HI $\gamma$ S, HIFROST. For the initial measurements, beam energies of 8, 12, 16 MeV are employed. I will talk about the target system HIFROST as well as measurement.