Helicity Amplitude Composition of Deeply Virtual Compton Scattering Processes and Bethe-Heitler Interference ANDREW MEYER, Department of Physics, University of Virginia, Charlottesville, VA 22904, USA, GARY GOLDSTEIN, Department of Physics and Astronomy, Tufts University, Medford, MA 02155, USA, OSVALDO GONZALEZ, INFN, Torino, Italy, DUSTIN KELLER , SIMONETTA LIUTI, ABHA RAJAN, Department of Physics, University of Virginia, Charlottesville, VA 22904, USA — We provide the general expression of the cross section for deeply virtual exclusive scattering processes discussing in detail its helicity amplitude structure up to twist three accuracy,including kinematic power corrections. The processes analyzed are Deeply Virtual Compton Scattering from both unpolarized and polarized targets, Deeply Virtual Compton Scattering with recoil proton polarization, including their interference with the Bethe-Heitler process. The full azimuthal angular dependence of the cross section is presented. From the various azimuthal angle dependent cross section terms one can deduce the following observables in terms of the aforementioned helicity structures: the absolute cross section, the beam spin asymmetry from an unpolarized proton, the azimuthal asymmetry from a longitudinally/transversely polarized proton and the double-spin asymmetry from a longitudinally/transversely polarized proton.

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