

# Phenomenological assessment of proton mechanical properties

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A unique feature of generalised parton distributions is their relation to the QCD energy-momentum tensor. In particular, they provide access to the distributions of pressure and shear stress induced by its quark and gluon structure. In principle the pressure distribution can be experimentally determined in a model-independent way from a dispersive analysis of deeply virtual Compton scattering data through the measurement of the subtraction constant. In practice the kinematic coverage and accuracy of existing experimental data make this endeavour a challenge even in the quark sector. Elaborating on recent global fits of deeply virtual Compton scattering measurements using artificial neural networks, we present the current knowledge on this subtraction constant. We also emphasize the interest of probing GPDs through the production of quarkonia to access the pressure distribution induced by gluons. This study will pave the way for future multi-channel analysis when more precise data will become available, eg obtained in the foreseen electron-ion colliders EIC and EICc, or at the high luminosity LHC.

**Authors:** DUTRIEUX , Hervé (CEA); LORCÉ, Cédric (Ecole polytechnique); MOUTARDE, Hervé; SNAZDER, Pawel; TRAWINSKI, Arkadiusz Pawel (The Andrzej Soltan Institute for Nuclear Studies-Unknown-Unknown); WAGNER, Jakub (Institute for Nuclear Studies)

**Presenter:** DUTRIEUX , Hervé (CEA)

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