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Energy-momentum tensor for unpolarized proton target

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The expectation value of the quantum energy-momentum tensor (EMT) for an unpolarized proton target in the Breit frame can be matched with an anisotropic perfect fluid EMT. This matching offers the possibility of interpreting the EMT form factors in terms of the internal energy and transverse/radial pressure inside an unpolarized proton target.

The generalization of this result to a more general class of frames leads to additional terms in the anisotropic fluid EMT, which can be related to the rotation and spin of proton.

We illustrate these results using current phenomenological knowledge of the EMT form factors.

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