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Timelike Compton Scattering - new theoretical results and experimental possibilities

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Generalized Parton Distributions (GPDs) offer a new way to access the quark and gluon nucleon structure. We advocate the need to supplement the experimental study of deeply virtual Compton scattering by its crossed version, timelike Compton scattering (TCS) i.e. the exclusive photoproduction of a lepton pairs with large invariant mass. We review recent progress in this domain, in particular the need to include NLO corrections to any phenomenological program to extract GPDs from experimental data. We also stress that data on TCS at high energy should be available soon thanks to the proposed experimental program at JLab at 12 GeV, and study of ultraperipheral collisions at RHIC and LHC which opens a window on quark and gluon GPDs at very small skewness.

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