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## Quantum tomography and entanglement of top quarks at the LHC with the CMS experiment.

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Quantum entanglement is one of the most famous and strange phenomena observed in quantum systems. Going against classical intuition, entanglement and other correlation have been studied widely by researchers mainly in low-energy systems (eV - MeV). The Large Hadron Collider (LHC) provides a unique environment to test these quantum properties at the highest energy scales ever. This can be done through the top quark-antiquark (tt) system produced at the LHC, since thanks to the top's large decay width, its spin information gets transferred to the angular distributions of its decay products. In this work, we present some general aspects of quantum tomography in the tt system (Phys. Rev. D 100, 072002) and recent results probing quantum entanglement between the top quarks (arXiv:2406.03976) using data recorded by the Compact Muon Solenoid (CMS) detector during the LHC Run II.

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