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Determining the CP Property of the $ht\bar{t}$ Coupling via a Gluon Jet Anisotropy Substructure

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Determining the CP property of the Higgs boson is important for a precision test of the Standard Model as well as for the search for new physics. We propose a novel jet substructure observable based on the azimuthal anisotropy in a linearly polarized gluon jet that is produced in association with a Higgs boson at hadron colliders, and demonstrate that it provides a new CP-odd observable for determining the CP property of the Higgs-top interaction. We introduce a factorization formalism to define a polarized gluon jet function with the insertion of an infrared-safe azimuthal observable to capture the linear polarization.

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