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Lepton distribution as a probe of new physics in production and decay of t-quark and its polarization

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We investigate the possibilities of studying possible new physics in various processes of t-quark production using the kinematical distributions of the secondary lepton coming from decay of t-quarks. We show that the angular distributions of secondary lepton are insensitive the anomalous tbW vertex and hence is a pure probe of new physics in a generic process of t-quark production. The energy distribution of these leptons is distinctly affected by anomalous tbW couplings and can be used to analyze them independent of the production process of t-quarks. The effects of t-polarization on the distributions of decay leptons are demonstrated for top-pair production process at a gamma-gamma-collider mediated by a heavy Higgs boson.

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