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Alternatives to the Standard Model predict new particles which decay into top-antitop pairs and which could be detected in ATLAS. A leptophobic Z' and Kaluza-Klein gluons from Randall-Sundrum models with extra dimensions were used as benchmark models for the analysis with identical generation parameters as in CDF and D0. The semileptonic decay of the top-antitop system is studied in this analysis. A resolved final state, with the final jets being separated and a boosted scenario, identified by overlapping jets in the hadronic decay of the top, are orthogonalised, so that both can be combined coherently in the limit setting strategy. The irreducible background given by Standard Model top-antitop events are the largest contribution, followed by W +jets.

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