

Dark Matter in Association with a Single Top

Thursday, 5 April 2018 16:30 (15 minutes)

Dark matter scenarios with spin-0 mediators in the s-channel have been tested in well-established processes with missing energy, such as top-pair- and mono-jet-associated production. We suggest electroweak single top production in association with a dark matter pair as an alternative channel. Based on a realistic analysis for the LHC at 13 TeV, we demonstrate how to discriminate between the signal and Standard-Model background using event kinematics. With 300 fb^{-1} (3 ab^{-1}) of data, on-shell scalar mediators with a coupling strength $g_{St} = 1$ to top quarks can be probed up to masses of 180 (360) GeV. Single-top-associated dark matter production should thus be included as an independent search channel in the LHC dark matter program.

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Session Classification: Open Session C)

Track Classification: Default track