Contribution ID: **954** Type: **Poster**

Searching for Dark Matter in top quark production with the CMS experiment

Friday, 8 July 2022 20:05 (20 minutes)

A search for Dark Matter (DM) produced in association with top quarks, with a focus on the dileptonic channel, is presented. This kind of search provides sensitivity to models where the DM couples to the Standard Model (SM) via a spin-0 mediator with a yukawa coupling, which can arise in a number of BSM physics scenarios, for example the 2HDM+a model. This analysis is part of the CMS search covering the dileptonic, semileptonic and full hadronic final states with the full Run-2 dataset, which combines for the first time the top quark pair + DM and single top + DM processes, greatly improving sensitivity to the highest mediator masses in the search.

The dileptonic channel poses an interesting challenge due to a large amount of missing transverse momentum in the SM tt background, and an irreducible ttZ (Z⟶νν) background. This analysis therefore uses novel variables and machine learning techniques in the signal extraction, and new control regions to constrain the irreducible backgrounds.

In-person participation

Yes

Primary author: STAFFORD, Dominic (Deutsches Elektronen-Synchrotron DESY)

Presenter: STAFFORD, Dominic (Deutsches Elektronen-Synchrotron DESY)

Session Classification: Poster Session

Track Classification: Dark Matter