Contribution ID: **47** Type: **not specified**

The top quark legacy of the LHC Run II for PDF and SMEFT analyses

Tuesday 9 May 2023 15:30 (15 minutes)

I will present a study of the impact of top quark production at the LHC on global analyses of parton distributions (PDFs) and of Wilson coefficients in the SMEFT, both separately and in the framework of a joint interpretation. We consider the broadest top quark dataset to date containing all available measurements based on the full Run II luminosity. First, we determine the constraints that this dataset provides on the large-x gluon PDF and study its consistency with other gluon-sensitive measurements. Second, we carry out a SMEFT interpretation of the same dataset using state-of-the-art SM and EFT theory calculations, resulting in bounds on 25 Wilson coefficients modifying top quark interactions. Subsequently, we integrate the two analyses within the SIMUnet approach to realise a simultaneous determination of the SMEFT PDFs and the EFT coefficients and identify regions in the parameter space where their interplay is most phenomenologically relevant.

Author: MADIGAN, Maeve

Presenter: MADIGAN, Maeve

Session Classification: SM III

Track Classification: BSM