Contribution ID: **11**   Type: **not specified**

Exploring the 3HDM with Dark Matter and Machine Learning

Tuesday 28 January 2025 09:30 (12 minutes)

We investigate the constraints and phenomenology of the $Z_2 \times Z_2'$ symmetric Three Higgs Doublet Model, focusing on a framework with two inert scalars as suitable dark matter candidates. Our study includes an analysis of the vacuum structure and evaluation of the model against all theoretical and experimental constraints. We expand the analysis to unexplored regions in parameter space, populating the entire mass range and uncovering new features, such as the potential for equal contributions from both dark matter candidates to the relic density. Additionally, we employed an evolutionary Machine Learning algorithm, implemented with a recent CMAES python package, to enhance parameter space exploration.

Primary author: FIGUEIREDO, Pedro

Presenter: FIGUEIREDO, Pedro