

Roadmap of Dark Matter models for Run 3



Monday, May 13, 2024 - Friday, May 17, 2024

CERN

Scientific Program

Dark Higgs

Discussion about Dark Higgs model (<https://arxiv.org/abs/1701.08780>), including
theory overview
experimental overview of ATLAS & CMS results
benchmarks
presentation of results

and other topics

Extended Higgs sectors

Discussion focusing mainly on 2HDMa model (<https://arxiv.org/abs/1701.07427>) and variants.

The session will contain
theory overview
experimental overview from ATLAS & CMS
discussion of missing signatures
update of benchmarks for Run 3
presentation of results

and other topics

t-channel

Discussion on t-channel models (e.g. [enter link description here](#)) touching upon
theory overview
experimental overview
new directions (unexplored signatures etc)

s-channel & Higgs to invisible

Discussion on s-channel and Higgs to invisible
presentation of results for s-channel models
new interpretations
future directions in experimental searches (e.g. ATLAS+CMS H_{inv} combination)

Dark showers

Discussion on dark showers (dark QCD) models with
summary of experimental results
summary of models/benchmarks and recommendations for Run 3
future directions for experiments

LLP signatures

Discussion on synergy between DM and Long-Lived-Particle searches
summary of experimental results and relation to DM searches
recommendations on the presentation of results

etc

Low mass signatures, ALPs, dark photons

Discussions focusing on models with low mass DM candidates
experimental results
theory models
relation to other benchmarks (e.g. dark Higgs)

etc

Unexplored signatures & wildcard ideas

Session focusing on unexplored/poorly explored models/signatures/experimental ideas.