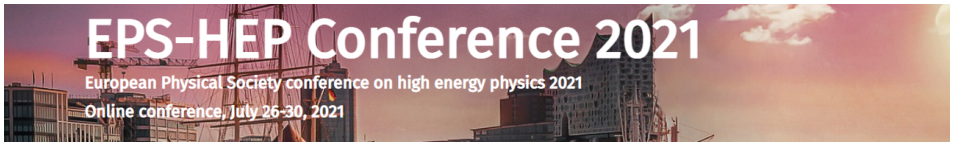

Contribution ID: **625** Type: **Parallel session talk**

The forgotten channels: charged Higgs boson decays to a $W^{\pm}$ and a non-SM-like Higgs boson

Monday 26 July 2021 16:00 (15 minutes)

The presence of charged Higgs bosons is a generic prediction of multiplet extensions of the Standard Model (SM) Higgs sector. Focusing on the Two-Higgs-Doublet-Model (2HDM), we discuss the charged Higgs boson collider phenomenology in the theoretically and experimentally viable parameter space. While almost all existing experimental searches at the LHC target the fermionic decays of charged Higgs bosons, we point out that the bosonic decay channels — especially the decay into a non-SM-like Higgs boson and a W boson — often dominate over the fermionic channels. We propose several benchmark scenarios with distinct phenomenological features in order to facilitate the design of dedicated LHC searches for charged Higgs bosons decaying into a W boson and a non-SM-like Higgs boson.

First author

Jonas Wittbrodt

Email

jonas.wittbrodt@thep.lu.se

Collaboration / Activity

none

Primary author: WITTBRODT, Jonas (Lund University)

Co-authors: BAHL, Henning (T (Phenomenology)); STEFANIAK, Tim (T (Phenomenology))

Presenter: WITTBRODT, Jonas (Lund University)

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