Overview Cosmo Indirect working group

Swedish di-higgs meeting

April 15, 2021

Overview

- **Aim to explore the use of EFT's and simplified models to probe the effective higgs potential.**
- **Activity both on the collider and cosmology side and studying the overlap.**
- **Connect full UV models to EFT's and simplified models and establish maps between them.**
- **People from theory and experimental groups in Lund, Stockholm and Uppsala participating.**
- **Meets Wednesdays once a week at 10:00.**
- **Collecting ongoing activities in a live summary document.**

Current email list (please send an email if you want to be added):

Rikard Enberg, Luca Panizzi, Johan Rathman, Jonas Wittbrodt, Jörgen Sjölin
Venugopal Ellajosyula, António Morais, Mårten Berenstam, Arnaud Ferrati,
Karl Gellerstedt, Tom Carlson, Johan Löfgren, Hanna Brännström, Laura Sanches,
Stefano Moretti, Eliel Camargo-Molina, Roman Pasechnik, Andreas Ekstedt, Serhat
Oerdek, Dongwon Kim, Felipe Freitas

Current activity summary

Snapshot from the live document:

Activity examples

- **Find regions in EFT parameter space that allows for first order phase transitions (FOPT). Paper on promising existence recently published by Rikard, Eliel and Johan arXiv:2103.14022.**
- **Connect EFT FOPT regions to colliders and future astronomical measurements.**
- **Find benchmark points using full UV models and derive maps to EFT and simplified models using matching.**
- **Study the ”grayline” between resonant och non-resonant production and dependence on observables.**
- **Find new observables and final states that improves the sensitivity.**
- **Many nice opportunities here for new students, please let us know if you are interested in participating!**