

GPS NMSSM

- **Aim: discuss NMSSM specific phenomena**
- **Ulrich Ellwanger, Laurent Duflot and Julien Masbou**
- **Continuation of the InPhyNity project (INP)**
 - **Two workshops organized in Orsay (2016) and Montpellier (2017)**
- **Kick off later this year:**
 - **Will be announced on the terascale mailing list**
 - **Thinking about a face2face meeting/workshop before the end of this year**

Tasks

- **Propose NMSSM specific final states/signal regions for the LHC, preferably including estimates of expected significances of excesses w.r.t. the Standard Model via simulations; can be submitted to the LHC HXS WG3**
- **Re-interpret available searches at the LHC in terms of NMSSM specific processes**
- **need to simulate such processes, need tools like CheckMate/MadAnalysis/... for cross checks against the data (unless interpretations by ATLAS/CMS can be used directly for NMSSM specific processes, at least in some regions of the NMSSM parameter space)**
- **Correlate signals at the LHC with dark matter relic density/direct detection cross sections**

Some Examples

1. **Exotic decays of $H_{SM} \rightarrow A + A \rightarrow XXXX$ (or $S + S \rightarrow XXXX$):** The recent coupling measurements of H_{SM} by ATLAS and CMS imply upper limits on possible BRs($H_{SM} \rightarrow AA \rightarrow XXXX$) in the NMSSM. What precisely are these upper limits? Which channels (depending on M_A) remain the most promising ones for future searches?
2. **Direct production of mostly singlet-like H_S (A_S), in ggF or in ass. with b(b), typically in the diphoton final state:** Compilation of present searches (excess in CMS?) and possibilities within the NMSSM.
3. **Prospects for searches for $H_3 \rightarrow H_{SM} + H_S$ where H_3 is MSSM-like, produced via ggF or in ass. with b(b), in various final states.**
4. **Sparticles decaying via cascade decays into a singlino LSP:** Prospects for (and present limits on) sparticle (neutralino/chargino/stop/squarks/gluino) production and cascade decays into a singlino LSP + $H_{SM}/H_S/Z$.

Plenty of possible tasks...

Famous Last Words

Gilbert Moulta, Tilman Plehn and Dirk Zerwas

- **Please subscribe to the mailing list via: <http://terascale.in2p3.fr>**
- **The GDR lives on your participation as speaker and participant: thank you for coming!**
- **Next meeting: Annecy 2019 after Moriond and before Les Houches**
- **Thank you to the coordinators: Emmanuel, Marco, Christophe, Nicolas, Pietro, Marie-Helene, Ana, Stéphane, Eric, Benjamin, Eric, Jennifer, Samuel and Rick, Jonas, Richard**
- **Thank you: Andreas, Kallia, Vincent and Julien B**
 - **Aim for a working meeting face2face**
- **Thank you for : Benjamin has asked to step down last year, Eric, Samuel and Jennifer taking over**
- **Thank you to for the very generous support (lodging, meals,...): IPPP Durham**
- **Big thank you to:**
 - **Linda and Steven**

