
Physics Landscapes

A.K.A. **Beyond the Standard Model**

Convenors:

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Goals:

1. Experimental “objects”

- review differences between Tevatron and LHC algorithms
- comparison of performance in LHC MC with Tevatron MC and data
- inject realism into LHC simulation and test impact on physics analyses

2. “Model independent” analysis

Given a signal, try to explain it within the SM + one new particle.

So let’s study all types of new particles (one at a time) and see what signals they give and how to differentiate them.

Classify new particles according to spin (gauge bosons, fermions, scalars) and charges.

3. Models - case studies

Otherwise, check if various models could explain the signal(s).

Warning: there are many models, and most of them have widely different regions in the parameter space.

Projects:

1. Experimental “objects”

- **Electrons and Photons (Yuri Gershtein)**
- **Muons (Carsten Hof, Carsten Magass)**
- **Taus (Michael Heldmann, Ingo Torchiani)**
- **Jets and Missing Et (Shoji Asai, Song Ming Wang, Reiseburo Tanake)**
- **Tracking and b-tagging (Veronique Boisvert)**

2. “Model independent” analysis

- **Z 's (Michael Schmitt, Benjamin Trocme)**
- **Vectorlike Quarks (Tim Tait, Georges Azuelos)**
- **TeV-Scale String Resonances (Tao Han)**
- **Leptoquarks (Michael Spira)**
- **W 's (Zack Sullivan)**
- **Topgluons, colorons, ...**
- **Light gluinos, ...**
- **Scalars**
- **...**

3. Models - case studies

- MSSM (Sabine Kraml, Michael Spira, Alexey Drozdetskiy, Gordon Kane, Bob Kehoe, Dirk Zerwas, Peter Skands, Tadas Krupovnickas, ...)
- Generators for Signals from Extra Dimensions (Albert de Roeck)
- Universal Extra Dimensions (Kyoungchul Kong, Konstantin Matchev, ...)
- Little Higgs Model with T-Parity (Jay Hubisz)
- Technicolor (Ken Lane)
- Higgsless Models (Andreas Birkedal)
- Technicolor (Ken Lane)
- ...