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2nd meeting of the Workshop
Characterization of New Physics at the LHC

CERN, Nov 5-6 2011

Introduction

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- Developments since the 1st meeting

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- Challenges and future tasks

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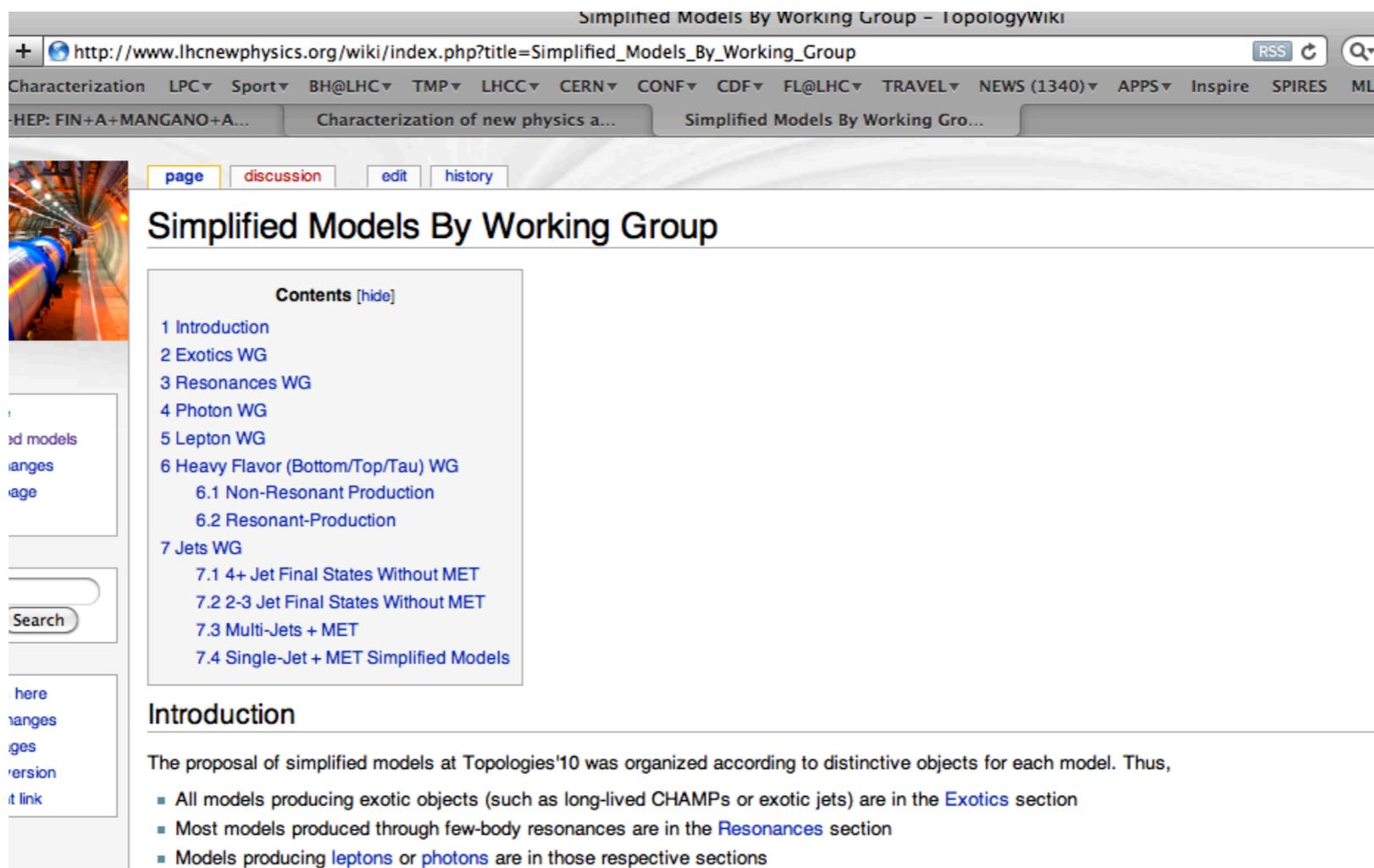
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Introduction

- Developments since the 1st meeting
- Challenges and future tasks
- Goals of this meeting

Since last time

- Much work done within the experiments on “simplified models”, in particular exploring classes of specific signatures
- SLAC-driven effort to document a theory-driven compilation of benchmark “simplified models”, inclusive of the relevant code for the models’ implementation (see <http://www-conf.slac.stanford.edu/topologies10/>):



The screenshot shows a web browser window displaying the TopologyWiki page. The URL is http://www.lhcnewphysics.org/wiki/index.php?title=Simplified_Models_By_Working_Group. The page title is "Simplified Models By Working Group". The main content area features a table of contents with the following items:

- 1 Introduction
- 2 Exotics WG
- 3 Resonances WG
- 4 Photon WG
- 5 Lepton WG
- 6 Heavy Flavor (Bottom/Top/Tau) WG
 - 6.1 Non-Resonant Production
 - 6.2 Resonant-Production
- 7 Jets WG
 - 7.1 4+ Jet Final States Without MET
 - 7.2 2-3 Jet Final States Without MET
 - 7.3 Multi-Jets + MET
 - 7.4 Single-Jet + MET Simplified Models

Below the table of contents, the "Introduction" section begins with the text: "The proposal of simplified models at Topologies'10 was organized according to distinctive objects for each model. Thus," followed by a bulleted list:

- All models producing exotic objects (such as long-lived CHAMPs or exotic jets) are in the [Exotics](#) section
- Most models produced through few-body resonances are in the [Resonances](#) section
- Models producing [leptons](#) or [photons](#) are in those respective sections

- New mandate, from the CERN management, to the LPCC and the experiments to deliver to CERN Council’s **Strategy Group review** a combined assessment of the findings of the 2010-11 (*plus possibly 2012*) run

Potential new tasks

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- LPCC and experiments required to produce combined assessment of the 2010-11(-12) findings in Higgs and BSM searches
- TH community, and other expt communities (e.g. LinCol, SuperB, ...), will use this to assess the implications of LHC data for BSM and future exptl projects

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- combination of limits/evidence from ATLAS/CMS(/LHCb)
- use of the results by the rest of the community (e.g. SUSY-models' fitters)

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➡ We need to prepare the framework/tools to enable:

- combination of limits/evidence from ATLAS/CMS(/LHCb)
- use of the results by the rest of the community (e.g. SUSY-models' fitters)
- This will require coordination with
 - ATLAS-CMS statistics forum
 - Fitters' groups
 - all LHC "search" efforts (Higgs, B decays, exotica of all sorts ...)
 - ...

Goals for this meeting

- Review the progress made by the experiments
- Status report on the SLAC WG
- Collect further input from all fields (TH + exps)
- In the context of simplified models, start outlining the roadmap and the workflow to go from analysis, to publication, to combination of the results of different experiments, to conclude with the exploitation of the published results by a random theorist.

analysis

format of the
published result

combination among
experiments

use of the results by a theorist, in
the context of a new model

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- Start a discussion of the new elements that we need to incorporate in the activity of this Workshop, in order to fulfill the need of the Strategy Group assessment. E.g.
- checklist of items that will need to be developed/prepared to arrive at a stage when we can consider combining limits/findings of the two (three) experiments (at least in the context of “simplified-model” studies)

Furthermore

- Start a discussion of the new elements that we need to incorporate in the activity of this Workshop, in order to fulfill the need of the Strategy Group assessment. E.g.
 - checklist of items that will need to be developed/prepared to arrive at a stage when we can consider combining limits/findings of the two (three) experiments (at least in the context of “simplified-model” studies)
- Discuss the desirability of extending the mandate of this Workshop to address other issues implicit in the “Strategy Group” task. E.g.
 - extend the framework from “simplified models” to include benchmark models (e.g. cMSSM, mSugra, Z' , etc)
 - initiate collaboration with “fitters” groups

Forthcoming events of possible relevance to this group:

- January 17-20 2011: **PHYSTAT 2011**, workshop on statistical issues related to discovery claims in search experiments, concentrating on those at the LHC.
- February 4: LHC Physics Day on “QCD and new physics searches”
- February 10-11: meeting of the BSM fitting groups
(see also DESY forum, <http://indico.desy.de/conferenceDisplay.py?confId=3517>, next meeting Nov 22-23 2010 at DESY)