

(RE)INTERPRETING LHC NEW PHYSICS SEARCH RESULTS: TOOLS AND METHODS

3rd meeting of the LHC (Re)interpretation Forum

16-18 OCTOBER 2017, FERMILAB, LPC

- (Re)interpretation methods, current studies
 - Reviews from experiments
 - Tutorials on (re)interpretation tools
 - Machine learning for (re)interpretation
 - LHC Run 2: New Physics

**FINAL DISCUSSION, FEEDBACK,
FUTURE PLANS**

100

80



Forum on the Interpretation of the LHC Results for BSM studies

The quest for new physics beyond the Standard Model is arguably the driving topic for Run 2 of the LHC. Indeed, the LHC collaborations are pursuing searches for new physics in a vast variety of channels. While the collaborations typically provide themselves interpretations of their results, for instance in terms of simplified models, **the full understanding of the implications of these searches requires the interpretation of the experimental results in the context of all kinds of theoretical models.** This is a very active field, with close theory-experiment interaction and with several public tools being developed.

With this forum, we want to provide a platform for continued discussion of topics related to the BSM (re)interpretation of LHC data, including the development of the necessary **public** [RecastingTools](#) and related infrastructure.

If you have questions or want to contribute, contact Sabine Kraml, sabine.kraml@gmail.com, or any of the topical contacts given below.

Meetings

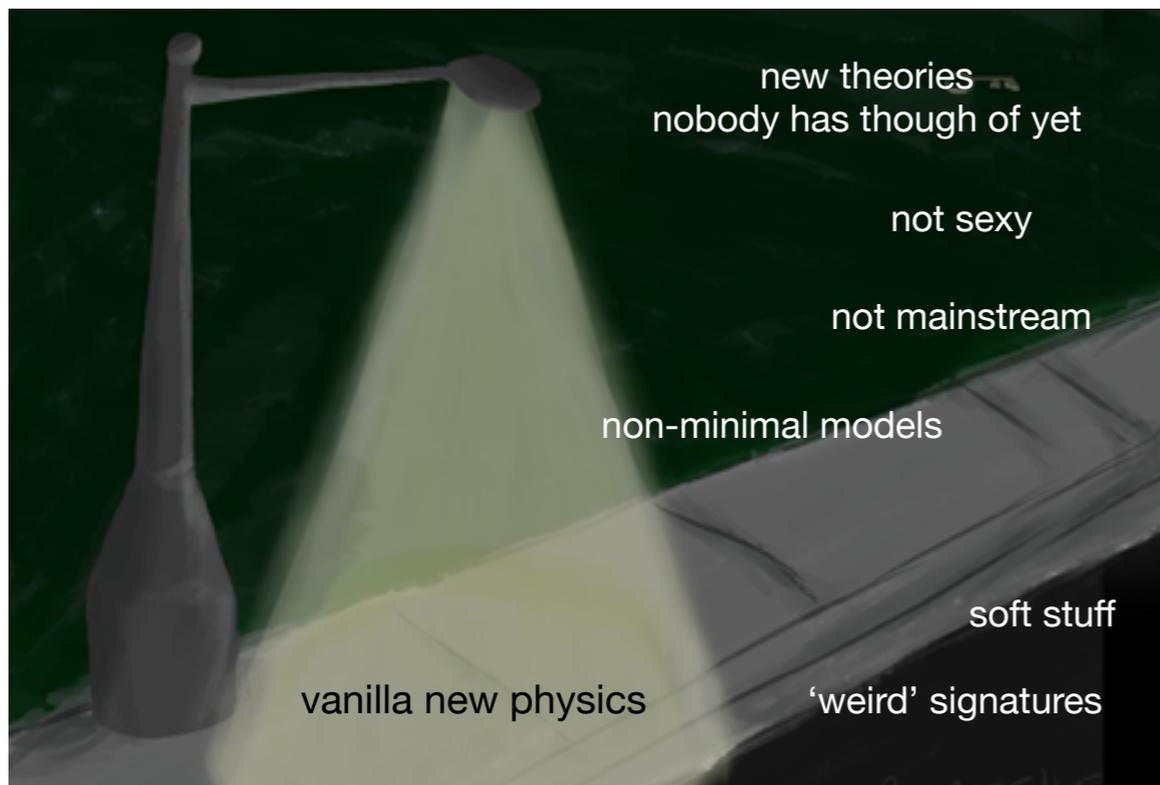
Meetings of this forum

- [3rd workshop](#), 16-18 Oct 2017 at Fermilab ← involve more the US community
- [2nd workshop](#), 12-14 Dec 2016 at CERN
 - [Agenda](#) | [introduction](#) | [final discussion](#) | [WorkshopSummaryNotes](#)
- **Kick-off workshop: (Re)interpreting the results of new physics searches at the LHC**, 15-17 June 2016 at CERN
 - [Agenda](#) | [general discussion](#) | [KickoffSummaryNotes](#)

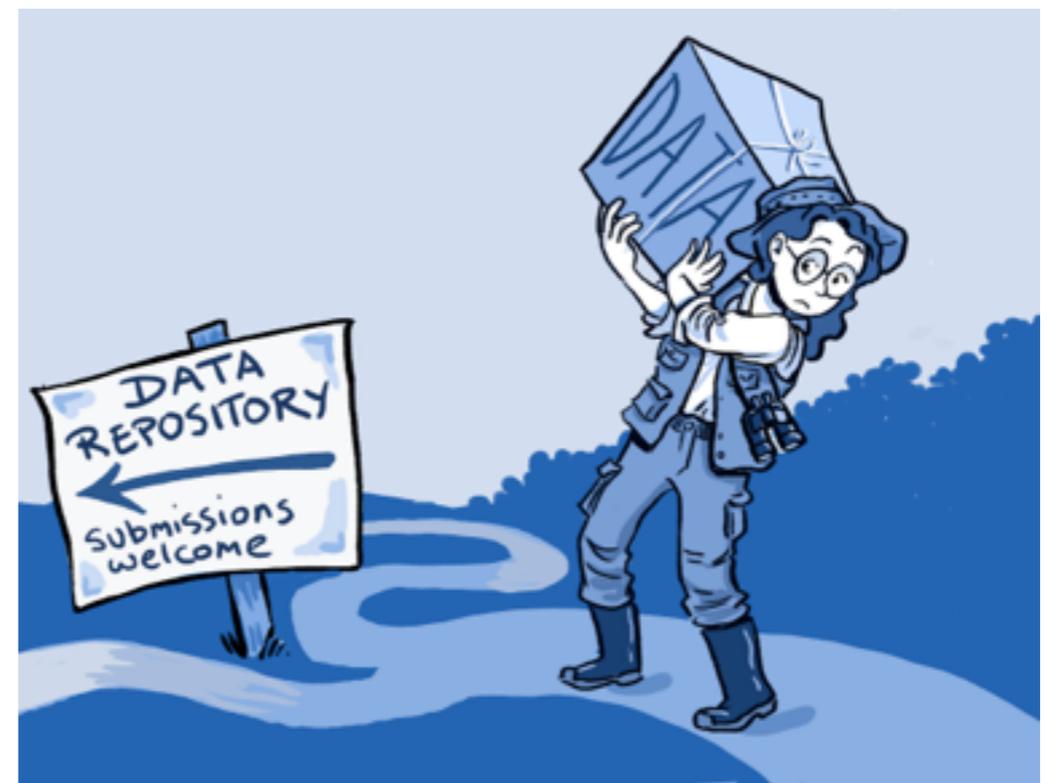
<https://twiki.cern.ch/twiki/bin/view/LHCPhysics/InterpretingLHCresults>

“a platform for **continued discussion** of topics related to the BSM **(re)interpretation of LHC data**, including the development of the necessary **public tools** and **related infrastructure**.”

Search beyond the streetlight



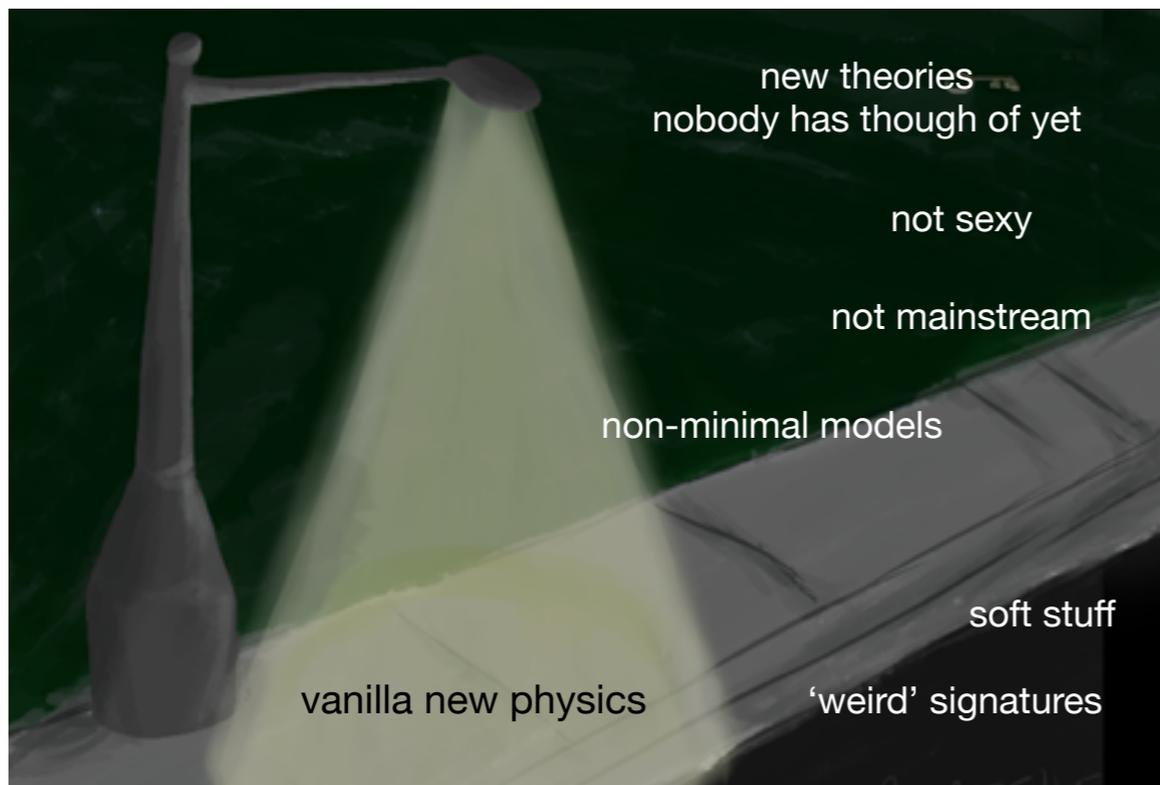
Ensure long-term impact of results, use in global analyses, etc.



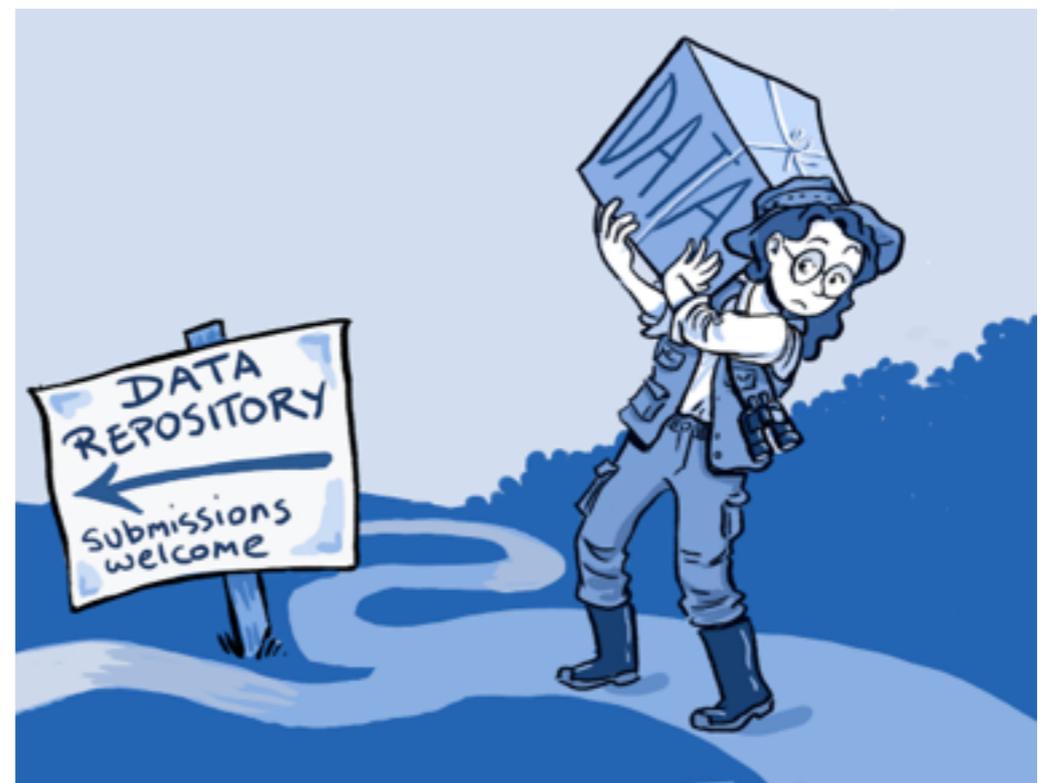
“.... understand what someone outside your research project (*or you in 5-10 years!*) would need to know about your data in order to build on your work.” [GitHub]

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Search beyond the streetlight



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We want to know what all the LHC and other data tell us about the TeV scale and beyond



Wrapping up this meeting

Three days of intense discussions of methods & tools, recent recasting studies, material provided by the experiments, open data, machine learning, etc.

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 - LHC open data

Chairs: Sezen Sekmen (Kyungpook National University) • Sabine Kraml (LPSC Grenoble) • Zhen Liu (Fermilab)

Organizing committee:
JoAnne Hewett (SLAC) Steven Mrenna (Fermilab)
Ahmed Ismail (Pittsburg U) George Reidliger (BNL)
Michelangelo Mangano (CERN) Carlos Wagner (U. Chicago)
David Miller (U. Chicago) Frank Würthwein (UCSD)

Local organization committee:
Javier Duarte (Fermilab)
Kiel Howe (Fermilab)
Seyda Ipek (Fermilab)
Nadja Strobbe (Fermilab)

LPC coordinators:
Cecilia Gerber (LJL)
Boaz Klima (Fermilab)

LPC events committee:
Gabriele Benelli (Brown U)
Ben Kreis (Fermilab)

<https://indico.cern.ch/event/639314>

- What were your expectations of this meeting?
- Where they met?
- Are there aspects/topics we are missing?
- Comments for the future?

Request: contribute to the twiki! There's a long list of topics and activities, everybody's help needed to keep documentation up to date. Don't hesitate to add content, create subpages, and so on.



Next meeting: early 2018 (Spring?) at CERN

+ possibly topical sub-group meetings before

Shall we aim at a writeup
(whitepaper, yellow report, ...)
before the end of Run 2?



THANKS TO

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Hannsjoerg Weber

for their great efforts and continued support
in preparing and running this workshop at LPC