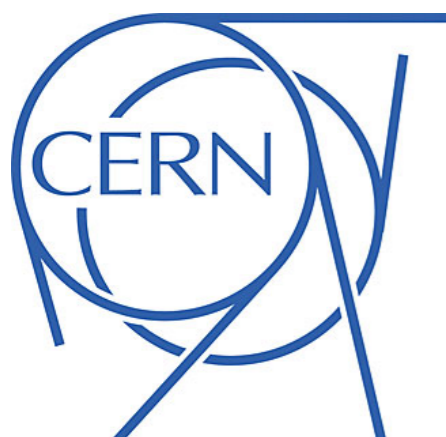




Re-interpretable Results Discussion

Maximilian Swiatlowski - TRIUMF

Nadya Chernyavskaya - CERN



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Points for discussion

◆ Goals

- Provide *all necessary* information required for interpretation of the experimental results in the context of *all kinds* of theoretical models *in a consistent, structured and clear way*

Recommendations emphasise:

1. Prompt availability of numerical analysis data in digitised electronic form to enable re-use.
2. More complete publication of full-detail experimental data:
 - correlation information
 - public likelihoods
 - Open Data
 - forensic analysis code preservation
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3. Community-wide dialogue regarding re-use of unbinned fits and machine-learning algorithms.

Moreover, theorists should (start) to follow the same reproducibility requirements as we ask them from the experiments.

[From 6th workshop of the LHC Reinterpretation Forum](#)

Some items are being actively addressed, some require more work and are the points of the discussion today...

Points for discussion

◆ Publishing likelihoods

- Full vs simplified (issues like loss of correlations, skew...)
- “Next-to-simplified likelihood”, a simple method to encode asymmetry information into correlations via publication of only Nbins additional numbers.
- ML approach (enable large scale full likelihood) : The DNNLikelihood: enhancing likelihood distribution with Deep Learning, “*efficiently parametrise the LF, treated as a multivariate function of parameters of interest and nuisance parameters with high “dimensionality, as an interpolating function in the form of a DNN predictor”*”
- ML approach, Approximating Likelihood Ratios with Calibrated Discriminative Classifiers

“An immediate action that can be taken by the community: (i) publish all the associated RooWorkspaces or (ii), for binned statistical models based on the HistFactory specification, publish the models in the pyhf JSON format.”

[arXiv:2109.04981](https://arxiv.org/abs/2109.04981)

What prevents us from doing this today?

Points for discussion

◆ Knowledge transfer

- SUSY/Exotics, DM communities are way ahead of the Higgs. Have been active and developing different tools covered in the previous talks.
- How can we ensure that there is a knowledge and expertise transfer?
 - E.g. LHC Higgs XS WG should closely follow the Forum on the Interpretation of the LHC Results for BSM studies