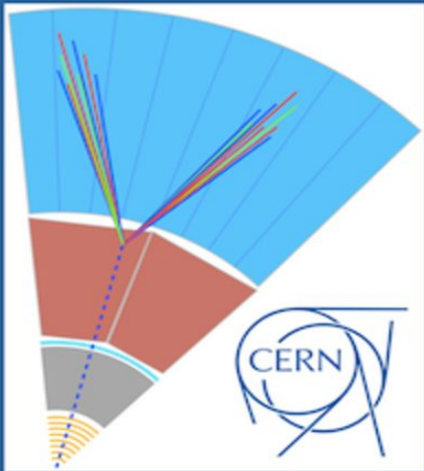


WG1: Simplified models / MC / RECASTing and reinterpretation for LLPs

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Searches for long-lived particles at the LHC:
Workshop of the LHC LLP Community



The main (long-term) goal is to make sure LHC LLP searches are optimally useful in the future and cover all relevant signatures and final states

Past efforts to address this in [AMHERST workshop](#), [KITP workshop](#) and [CERN mini-workshop](#). See also a live document [here](#). Past Ideas/proposal highlight :

- 1) **Gaps in LHC sensitivity for different theoretical models** (emerging jets, photon jets, displaced hadronic taus, etc)
- 2) The **need of simplified models**. Some ideas include RPV stops, GMSB stops and staus. The use of simplified models as tools to define and benchmark new searches
- 3) The need of a **clear path on how to present LLP analysis results**. Theorists don't need experimental efficiency curves to be super precise, can have large (30%) uncertainties. The more information provided, the better theorists can do, but this requires more manpower from the experiments
- 4) The need of **clear definitions of prompt objects**. This is essential for extending prompt searches to the displaced regime

Today we wish to address the following (in this order):

- 1) Discuss LLPs simulation in **publicly available software**, such as DELPHES, CheckMATE and MadAnalysis
- 2) **RECAST: when prompt searches breakdown in lifetime?** Strengths/weaknesses in lifetime of the collaborations? RECAST demo to start assessing this longer-term issue. Discuss how to move forward in **strengthening the RECAST framework for LLPs**
- 3) Discuss what information must be provided from LLP searches: **Which information is needed** and which is unnecessary for the experiments to provide **for a reliable theorist reinterpretation?** Try to construct a straightforward **checklist**
- 4) Propose **concrete simplified models** for the individual signature specific subsections in the white paper and also discuss their use as a generic tool to define and benchmark new LLP searches