Contribution ID: **746**   Type: **Parallel**

Unbinned machine-learned measurements for the LHC with systematic uncertainties

Wednesday 9 July 2025 16:20 (20 minutes)

I present a new method for unbinned cross-section measurements and related inference problems at the LHC. The new methodology revolves around 'refinable' machine learning of various model parameter dependencies with a particular focus on systematic effects. It shows significant performance gains in concrete applications. I will illuminate the general methodology for two realistic cases: An unbinned EFT measurement of the top quark pair production process at high pairwise mass and an unbinned cross-section measurement of the H->Tautau process. The second example also summarizes our contribution to the FAIR Universe Uncertainty Challenge.

Links:
https://www.codabench.org/competitions/2977
TTbar: https://arxiv.org/abs/2406.19076
Htautau: Submission before May 19th.

Secondary track

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Session Classification: Joint T08+T16

Track Classification: T16 - AI for HEP (special topic 2025)