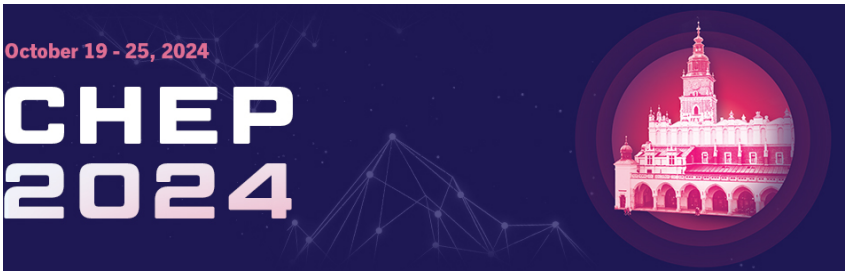

Contribution ID: **380** Type: **Talk**

Fair Universe HiggsML Uncertainty Challenge

Monday 21 October 2024 13:48 (18 minutes)

The Fair Universe project is organising the HiggsML Uncertainty Challenge, which will/has run from June to October 2024.

This HEP and Machine Learning competition is the first to strongly emphasise uncertainties: mastering uncertainties in the input training dataset and outputting credible confidence intervals.

The context is the measurement of the Higgs to tau+ tau- cross section like in HiggsML challenge on Kaggle in 2014, from a dataset of the 4-momentum signal state. Participants should design an advanced analysis technique that can not only measure the signal strength but also provide a confidence interval, from which correct coverage will be evaluated automatically from pseudo-experiments.

The confidence interval should include statistical and systematic uncertainties (concerning detector calibration, background levels, etc⋯). It is expected that advanced analysis techniques that can control the impact of systematics will perform best, thereby pushing the field of uncertainty-aware AI techniques for HEP and beyond.

The challenge is hosted on Codabench (an evolution of the popular Codalab platform); the significant resources needed (to run the thousands of pseudo-experiments needed) are possible thanks to using NERSC infrastructure as a backend.

The competition will have ended just before CHEP 2024 so that a first glimpse of the competition results could be made public for the first time.

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