Contribution ID: **1** Type: **Tutorial**

Analysis Optimisation with Differentiable Programming

Thursday, September 15, 2022 2:00 PM (1 hour)

This tutorial will cover how to optimise various aspects of analyses – such as cuts, binning, and learned observables like neural networks – using **gradient-based optimisation**. This has been made possible due to work on the relaxed software package, which offers a set of standard HEP operations that have been made differentiable.

In addition to targeting Asimov significance, we will also use the *full analysis significance* that incorporates systematic uncertainties as an optimisation objective. Finally, we will reproduce the neos method for learning systematic-aware observables, and you'll see how you can modify it for your use-case.

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Session Classification: Plenary Session Thursday