

# Third MODE Workshop on Differentiable Programming for Experiment Design



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## Toward particle identification in granular calorimeters

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Long-lived hadrons have different cross sections with nuclear matter, and they give rise to different reactions when they interact in dense media. Until now, calorimeters have not been designed to try and exploit these differences for particle identification; yet that information would be highly beneficial in detectors at future facilities.

In this presentation we will explore the observable features of showers initiated by different hadron species in a very high-granularity, homogeneous GEANT4-simulated calorimeter, to determine the level at which such particle ID information is extractable.

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