

# **abcd\_pyhf: Likelihood-based ABCD method for background estimation and hypothesis testing with pyhf**

*Monday, 4 December 2023 14:00 (30 minutes)*

The ABCD method is a common background estimation method used by many physics searches in particle collider experiments and involves defining four regions based on two uncorrelated observables. The regions are defined such that there is a search region (where most signal events are expected to be) and three control regions. A likelihood-based version of the ABCD method, also referred to as the “modified ABCD method”, can be used even when there may be significant contamination of the control regions by signal events. `abcd_pyhf` is a standalone implementation of this method utilizing `pyhf`. This implementation does not make any assumptions about the underlying analysis and can thus be used or adapted in any analysis using the ABCD method. This lightning talk will summarize the `abcd_pyhf` project and its current status.

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