Contribution ID: **51** Type: **not specified**

Double DisCo: An Automated ABCD Method

The ABCD method is one of the most highly utilized background estimation procedure in HEP. The key assumption for the method to work is that there are two discriminative features which are independent. Given one feature, there is a growing literature of methods for creating a second feature (as a neural network) which is independent of the first one. While these techniques were designed for searches using sideband fits, they can also be applied to the ABCD case. We extend these ideas to the case where both features are neural networks and are simultaneously optimized. The loss function has two instances of the distance correlation loss (DisCo), thus the "Double DisCo"title.

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Session Classification: Decorrelation and Semi/Unsupervised approaches