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## Topological Cut Optimization for $\Lambda_c$ Reconstruction Using the Supervised Learning Algorithm in TMVA at STAR

*Tuesday, 15 May 2018 19:10 (30 minutes)*

Measurement of charmed baryon,  $\Lambda_c$ , provides a unique tool to study the charm quark hadronization in the hot and dense medium created in heavy-ion collisions. With the dataset of Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV recorded by the STAR experiment at RHIC in 2014,  $\Lambda_c$  signals were successfully reconstructed through the hadronic decay channel ( $\Lambda_c \rightarrow pK\pi$ ) with a  $5\sigma$  significance. Measurements of better precision of the  $\Lambda_c$  production require more statistics and refined topological cut optimization.

In this poster, we will present  $\Lambda_c$  reconstruction using the Toolkit for Multi-Variate Data Analysis (TMVA)-Boost Decision Tree (BDT) method with combined data from 2014 and 2016. The improvement in the signal significance is notable compared to previous results using the TMVA-Rectangular Cut Optimization method. We will also discuss the cut optimization for  $\Lambda_c$  reconstruction in different transverse momentum and centrality bins with the TMVA-BDT method.

### Content type

Experiment

### Collaboration

STAR

### Centralised submission by Collaboration

Presenter name already specified

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