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Identification of charmed particles using Multivariate analysis in STAR experiment

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Due to their production at the early stages, heavy flavor particles are of interest to study the properties of the matter created in heavy ion collisions at RHIC.
Previous measurements of D and B mesons at RHIC[1, 2] using semi-leptonic probes show a suppression similar to that of light quarks, which is in contradiction with theoretical models only including gluon radiative energy loss mechanism[3].
A direct topological reconstruction is then needed to obtain a precise measurement of charm meson decays. This method leads to a substantial combinatorial background which can be reduced by using modern multivariate techniques (TMVA) which make optimal use of all the information available.
Comparison with classical methods and performances of some classifiers will be presented for the reconstruction of D^0 decay vertex ($D^0 \rightarrow K^-\pi^+$) and its charge conjugate from Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV.

[1]Adare A. et al., PHENIX Collaboration, arXiv:1005.1627\newline
[2]B.I. Abelev et al., STAR Collaboration, arXiv:0607012v3\newline
[3]Dokshitzer, Yuri L. and Kharzeev, D. E., Phys. Lett. B{\bf 519} \newline

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