

Measurement of the J/ψ production in dense and hot nuclear medium at ultra-relativistic energies with ALICE

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ALICE

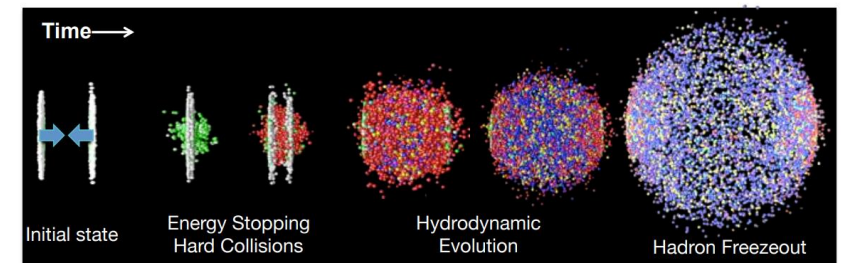


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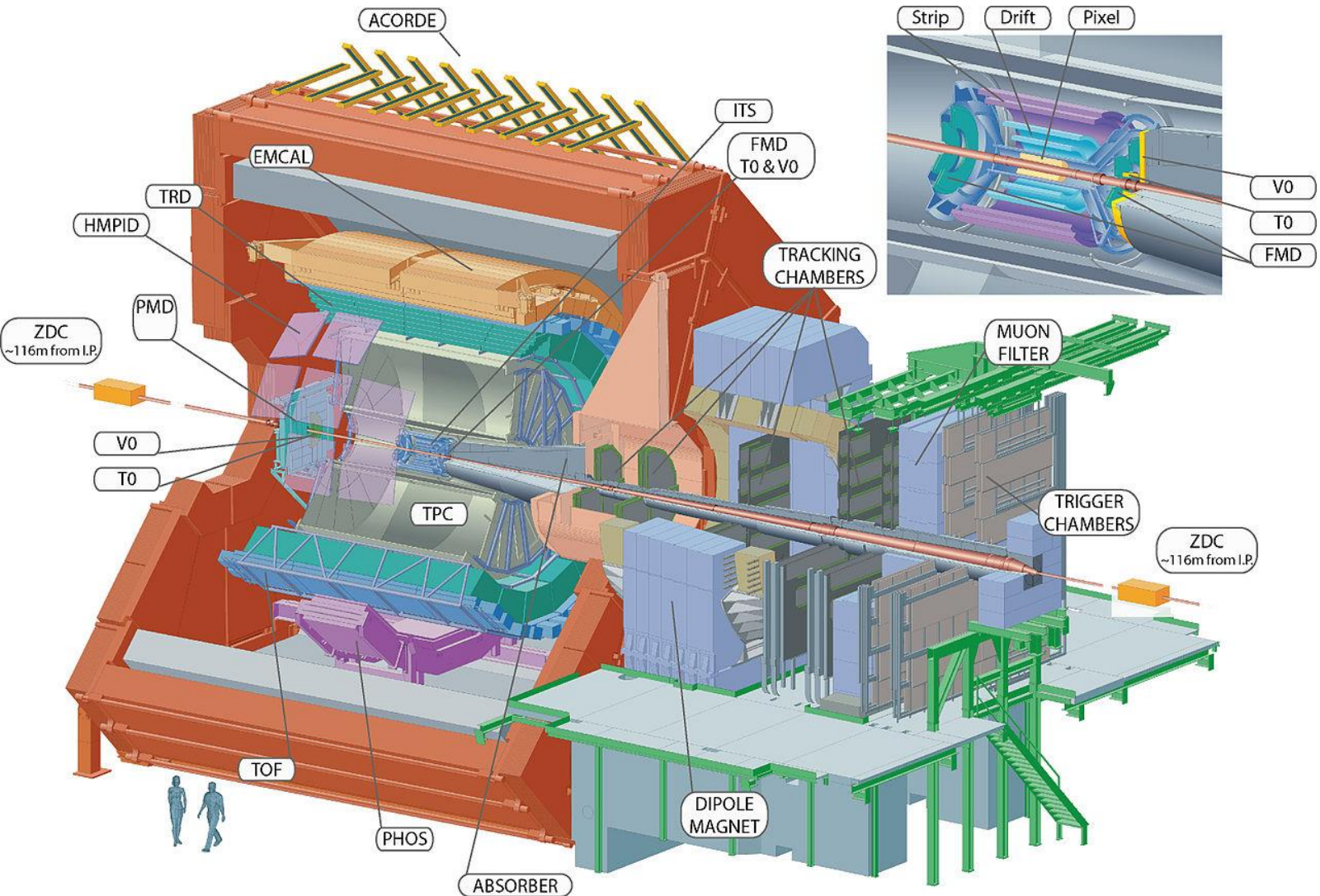
ALICE experiment at CERN



- ALICE (A Large Ion Collider Experiment) is a heavy-ion detector on the [Large Hadron Collider](#) (LHC) ring.
- It is designed to study the physics of strongly interacting matter at extreme energy densities, where a phase of matter called [quark-gluon plasma](#) forms.

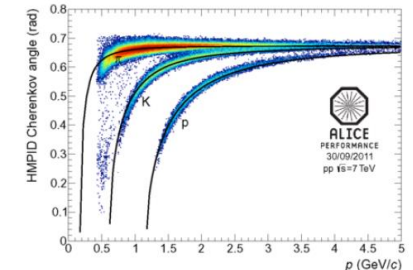
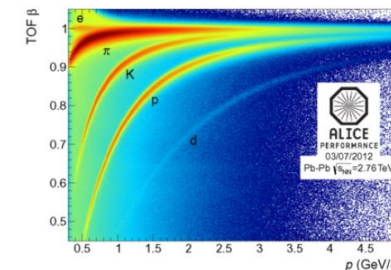
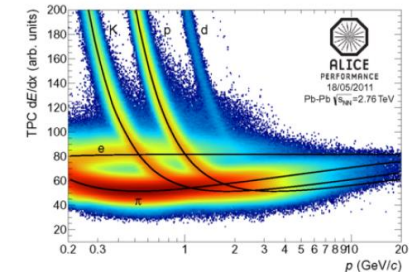
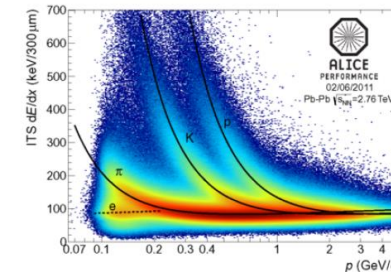


The ALICE experiment

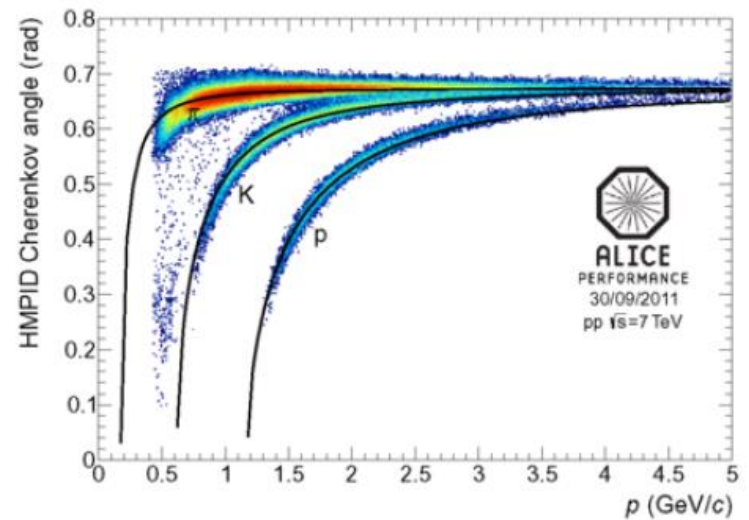
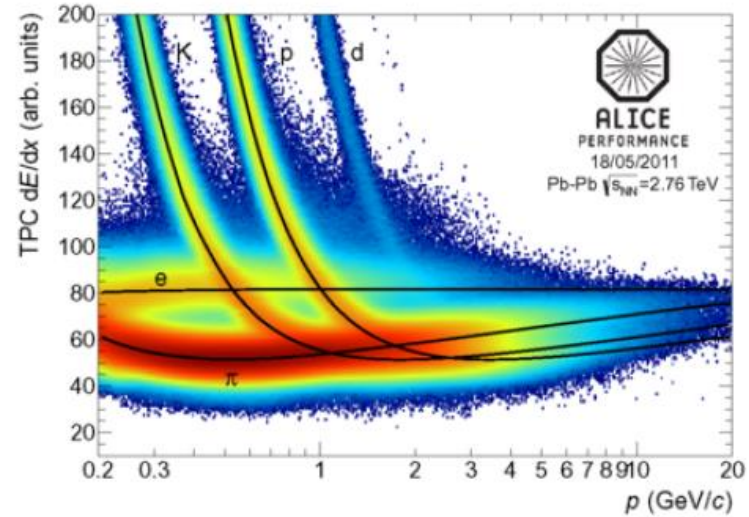
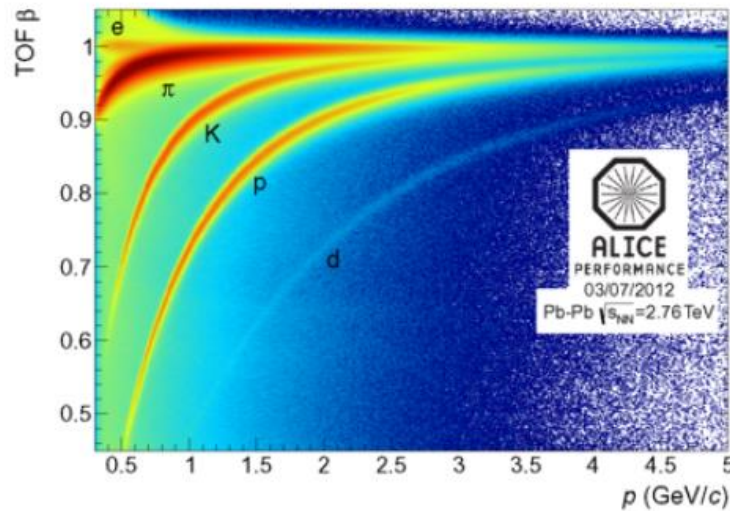
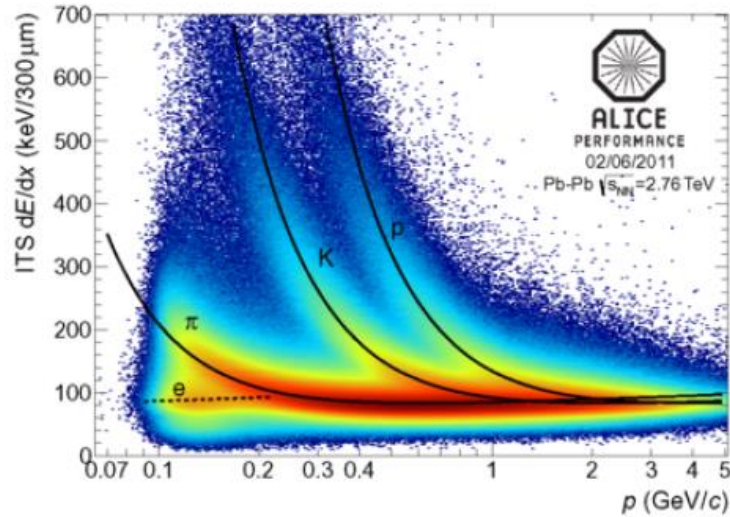


Key features:

- Excellent PID capabilities*
- High resolution tracking for low p_t tracks
- Low magnetic field (only 0.5 T)



Particle identification at ALICE



$$J/\psi \rightarrow e^+e^-$$

- Particle identification (PID) in ALICE consists of many systems, based on energy loss, time of flight (TOF) and Cherenkov radiation
- At higher momenta (1 GeV/c and above) one can see an “overlap” of characteristic curves coming from different particle species ☹️
- Can this be improved with ML ?

Summary (Goal of the project)

- Can ALICE particle identification system be improved, can we achieve higher efficiency thanks to ML in comparison to conventional “cut based” methods ?
- Examples of ML algorithms (BDT and/or MLP) and Monte Carlo simulations will be provided