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Suppression of high p_T hadron spectra in $p + A$ collisions

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Multiple hard and semi-hard parton scatterings in high-energy $p + A$ collisions involve multi-parton correlation in both momentum and flavor inside the projectile proton which will lead to modification of the final hadron spectra relative to that in $p + p$ collisions. Such modification of final hadron transverse momentum spectra in $p + A$ collisions is studied within HIJING 2.1 Monte Carlo model which includes nuclear shadowing of the initial parton distributions and transverse momentum broadening. Multi-parton flavor and momentum correlation inside the projectile are incorporated through flavor and momentum conservation which are shown to modify the flavor content and momentum spectra of final partons and most importantly lead to suppression of large p_T hadron spectra in pA collisions at both RHIC and LHC energies.

Summary

We have studied the nuclear modification of hadron spectra in $d + Au$ and $p + Pb$ collisions at the RHIC $\sqrt{s}_{NN} = 200 GeV and LHC energy \sqrt{s}_{NN}$=4.4 $TeV, respectively within both the HIJING 2.1 Monte Carlo model. Both therap$ collisions at the LHC is crucial to disentangle these cold nuclear effects from thatcaused by jet quenching in the hot quark-gluon plasma.

Primary author: Dr WANG, Xin-Nian (Central China Normal University and Lawrence Berkeley National Laboratory)

Co-author: XU, Rong (Central China Normal University)

Presenter: DENG, Wei-Tian (Frankfurt Institute for Advanced Studies)

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