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# Probing the partonic degree of freedom in high multiplicity p-Pb at 5.02 TeV collisions.

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Probing the quark gluon plasma in small system is a hot topic nowadays. By combining the thermal and hard parts, with the Cooper-Frye freeze-out, quark coalescence and hard parton fragmentation hadronization mechanisms, we investigate the $p_T$-spectra, the differential elliptic flow and the number of constituent quark (NCQ) scaling of pions, kaons and protons of high multiplicity p+ Pb collisions at $\sqrt{s_{NN}}$ = 5.02 TeV. More detailly, at low $p_T$ range, thermal hadrons are generated by the hydrodynamics, at intermediate and high $p_T$ range, we firstly coalescence the thermal and hard quarks, including the thermal-thermal, thermal-hard, hard-hard quark pairs recombinations, then the remnant hard partons those haven't found recombination partners are subjected to string fragmentation. We obtain a satisfactory description of elliptic flow and spectra over the $p_T$ range from 0 to 6 GeV, and demonstrate that the coalescence process is indispensable for the differential elliptic flow and NCQ scaling at intermediate $p_T$. This provides an opportunity to distinguish the origin of the collectivity in high multiplicity p+Pb collisions.
[1] W.Zhao, C.M.Ko, Y.X.Liu, G.Y.Qin and H.Song, Phys.Rev.Lett. 125, 72301 (2020).
[2] W.Zhao, C.M.Ko, Y.X.Liu, G.Y.Qin and H.Song, arXiv:2001.10689 [nucl-th].

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