

In-jet heavy Flavor Baryon-to-Meson yield ratios in p+p and Pb+Pb

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In-jet production is a useful tool to separate the contribution from the hard processes and the underlying events. In this letter, we find the in-jet requirement enhances the heavy flavor baryon-to-meson ratio more when a color re-connection mechanism (CR mode2) describes hadronization in p+p, which is opposite to the light flavor case. It indicates the hard process contribution alone will lead to an enhancement of the heavy flavor baryon-to-meson ratio using CR mode2 while the light flavor baryon-to-meson ratio enhancement is mainly coming from underlying events. When the hot and dense medium is involved in Pb+Pb collisions, the in-jet c^+/D^0 ratio also enhances at intermediate p_T when a coalescence + fragmentation hybrid approach is used to describe in-medium hadronization. To distinguish the mechanism of two types of enhancement, c^+/D^0 ratios as functions of particle-jet axis distances R for different jet p_T intervals are also been computed. The results indicate the enhancement described by the color re-connection mechanism is dominated by low p_T (< 2 GeV) enhancement and that described by a coalescence mechanism is dominated by intermediate p_T (2 – 4 GeV) enhancement. The detailed measurement of the in-jet c^+/D^0 ratios in p+p collisions at lower p_T will help constrain the baryon hadronization mechanism in the small system.

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