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Strange Correlation and the Signature of Flux-Tube Fragmentation

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In a pp collision, the production of quark-antiquark pairs along a color flux tube precedes the fragmentation of the tube. Because of local conservation laws, the production of a strange quark-antiquark pair will lead to the correlation of adjacently produced hadrons. Adjacently produced hadrons can be signalled by their rapidity difference falling within the window of $|\Delta y| < 1/(dN/dy)$, on account of the space-time-rapidity ordering of produced hadrons in a flux-tube fragmentation. Therefore, for two strange hadrons with opposite strangeness, the local conservation laws of momentum and strangeness will lead to a suppression of the angular correlation function $dN/(d\Delta\phi d\Delta y)$ at $(\Delta\phi, \Delta y) \sim 0$ on the near side, but an enhanced correlation at $\Delta\phi \sim \pi$ on the back-to-back, away side, within the window of $|\Delta y| < 1/(dN/dy)$. These properties can be used as signatures for the fragmentation of a color flux tube in a pp collision [1].

[1] C. Y. Wong, Phys. Rev. D92, 074007 (2015).

On behalf of collaboration:

None

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