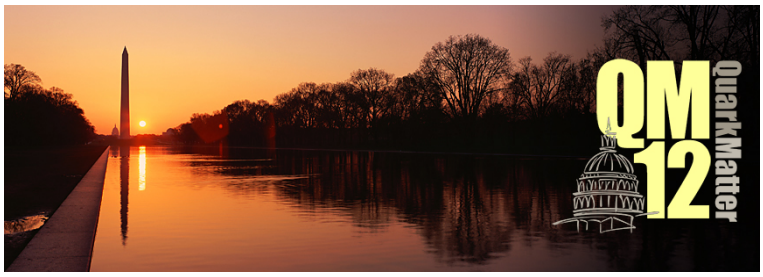

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Study of hyperon-hyperon correlations and search for the H-dibaryon with the STAR detector at RHIC

Thursday, August 16, 2012 4:00 PM (2 hours)

The production of large number of multi-strange hyperons per central nucleus-nucleus collision at RHIC allows us to study hyperon-hyperon interactions through measurement of particle correlations and search for exotic particles like dihyperons. In 1977 Jaffe[1] predicted a six quark state, H_0-dibaryon, with hypercharge (Y) = 0 and Strangeness (S) = -2 to be stable against strong decay, but not to weak decay. It has been proposed that the H_0 would appear as a bump in the $\Lambda - \Lambda$ invariant mass spectra if the H_0 is a resonance state, or it would lead to a depletion of the $\Lambda - \Lambda$ correlation near the threshold if the H_0 is weakly bound, which can be used to probe whether there is a stable H_0 or resonance. Considerable experimental efforts have been devoted to search for H_0. However there is no conclusive experimental evidence for a bound H_0. In addition to H_0, many other dihyperon states have been predicted thoeretically. However, very few measurements are available due to low multiplicity of hyperon production in early nuclear collisions.

Recently STAR has collected unprecedented high statistics data for Au+Au collision at RHIC, which provides a unique opportunity to look for the exotic particles and hyperon-hyperon correlations. In this talk, we will present the measurement of $\Lambda - \Lambda$ correlations for $\sqrt{s_{NN}}$ = 39-200 GeV in Au+Au collisions using the STAR experiment at RHIC. In addition to that, we will also present measurements of $\Lambda - \bar{\Lambda}$, $\Lambda - \Xi^-$ correlations for $\sqrt{s_{NN}}$ = 200 GeV in Au+Au collisions.

[1] R. L. Jaffe,Phys. Rev. Lett. 38,195(1977).

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