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Triple nuclear collisions and new perspectives to explore the QCD matter properties under new extreme conditions

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We suggest to explore an entirely new method to experimentally and theoretically study the phase diagram of str

We simulated the TNC using the UrQMD 3.4 model [3, 4] at the beam center-of-mass collision energies $\sqrt{s}$ = 200 GeV and $\sqrt{s}$ = 2.76 TeV. It is found that in the most central and simultaneous TNC the initial baryonic charge density is about 3 times higher than the one achieved in the usual binary nuclear collisions at the same energies [5]. As a consequence, a production of protons and Λ-hyperons is increased by 2 and 1.5, respectively, while a sizable suppression of their antiparticles is observed.

At the beam center-of-mass collision energies of 10-40 GeV, the production of protons as well as of Λ-hyperons is enhanced approximately by a factor of 2.2 compared to the binary collisions, while the positive kaons are enhanced by 1.5. Hence we conclude that in the TNC method it is possible to create substantially denser strange matter than in the binary collisions. It is argued that this method at lower energies can be of principal importance for searching the (tri)critical endpoint of the QCD phase diagram [5].

References:

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Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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