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Decoupling the rates of Bottomonium dissociation and recombination reactions in heavy-ion collisions using Bateman equation

Monday, 30 August 2021 13:00 (30 minutes)

The bottomonium states with their different binding energies and radii dissolve at different temperatures of the medium produced in relativistic heavy-ion collisions. Relative yields of bottomonium and their survival in the medium have the potential to map the properties of Quark-Gluon-Plasma (QGP). **This is the FIRST study** that the rate equations of dissociation and recombination are decoupled and solved separately using the Bateman equation **that makes easier the calculation of the net effect of QGP**. In this study, we estimate the combined effect of color screening, gluon-induced dissociation and recombination on Bottomonium production in heavy-ion collisions (Pb+Pb ions) at center of mass energy 5.02 TeV. To solve the recombination rate equation, we have used **a naive approach of Bateman solution which ensures the dissociation of the recombined bottomonium in the QGP medium** and the effects of the correlated mechanism of recombination and the dissociation of newly formed pairs. The modifications of bottomonium states are estimated with help of decoupled equations of gluon dissociation and recombination in an expanding QGP. Such a model study is **published in Nucl. Phys. A 1007, 122130 (2021)**, DOI: 10.1016/j.nuclphysa.2020.122130.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

No

Details

N/A

Internet talk

Yes

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