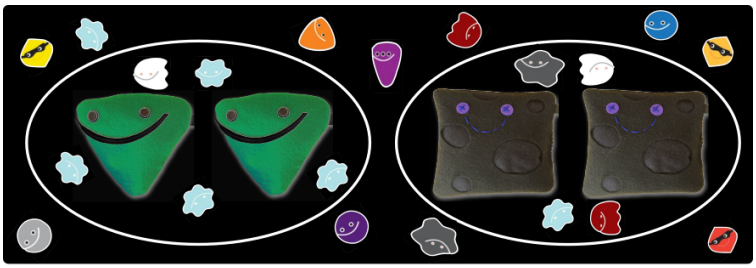

Contribution ID: **18** Type: **not specified**

Bottomonium suppression in heavy ion collisions

Friday 18 June 2021 21:20 (40 minutes)

The strong suppression of bottomonia in ultra-relativistic heavy-ion collisions is a smoking gun for the production of a deconfined quark-gluon plasma (QGP). In this talk I will discuss recent work that aims to provide a more comprehensive and systematic understanding of bottomonium dynamics in the QGP. The new paradigm is based on an open quantum system approach applied in the framework of potential-based non-relativistic QCD (pNRQCD). We demonstrate that the computation of bottomonium suppression can be reduced to solving a Lindblad-type equation for the evolution of the b-bbar density matrix including both singlet and octet states and transitions between them. To solve the resulting Lindblad equation, we make use of a "quantum trajectories method"which can be deployed in a massively parallel manner. Our computation depends on two transport coefficients that have been evaluated independently using lattice QCD. I demonstrate that our final phenomenological predictions agree well with available data from LHC 5.02 TeV Pb-Pb collisions for both bottomonium suppression and anisotropic flow.

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Session Classification: Main program