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HEAVY QUARKONIA IN MEDIUM AS OPEN QUANTUM DISSIPATIVE SYSTEM, A WAVE FUNCTION BASED APPROACH

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In static picture a quarkonium bound state in deconfined medium is either completely dissociated above some threshold temperature or just stays in the specific state below the threshold. In contrast, some recent studies suggest that the static quark antiquark potential for describing bound quarkonia should include an imaginary part. This shows a finite life time of the bound state in the medium and initiate a quest for dynamical picture of the dissociation. The dynamical picture becomes more relevant when the medium is expanding and cooling down rapidly, as in the case of heavy ion collision. A possible general framework for this dynamics is to view the quarkonia as an open system. We have designed a novel approach, based on the wave function, to address the real time dynamics of heavy quarkonia in medium (thermally equilibrated or not) produced in heavy ion collision.

Author: Mr DUTTA, Nirupam (Doctoral Student, Bielefeld University)

Co-author: BORGHINI, Nicolas (University of Bielefeld)

Presenter: Mr DUTTA, Nirupam (Doctoral Student, Bielefeld University)

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