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Real-Time-Evolution of Heavy Quarkonium-Bound-States

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Elucidating the production process of heavy quark bound states is a central goal in heavy-ion collisions [1]. Two central questions exist: Do bound states of heavy quarks form in the early time evolution of the glasma? If so, in which time regime can that happen? An Answer requires the development of a non-perturbative treatment of the real-time-dynamics of heavy quarkonia.

Here we present preliminary results from a simulation of bottomonium dynamics in the glasma, based on the concept of quenched, classical statistical simulations for the gauge fields [2]. We employ lattice real-time NRQCD to order $1/(aM_{\rm q})^2$ to describe the bottomonium evolution [3,4].

By computing the time-evolution of spectral functions of bottomonium-channels we expect to identify the emergence of bound states and their formation time in the evolving glasma.

References

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Primary author: Mr LEHMANN, Alexader (ITP Heidelberg)

Co-author: Dr ROTHKOPF, Alexander (ITP Heidelberg)

Presenter: Mr LEHMANN, Alexader (ITP Heidelberg)

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