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Nonequilibrium evolution of quarkonium inside the Quark Gluon Plasma

Using nonrelativistic QCD effective field theories and open quantum system we obtain a master equation to describe the nonequilibrium evolution of bottomonium in the QCD medium. The obtained Linblad equation fully accounts for the quantum and nonabelian nature of the system. The characteristic of the Quark Gluon Plasma are encoded in transport coefficients defined in terms of nonperturbative chromoleectric correlators evaluated on the lattice. We obtain
predictions for the nuclear suppression factor, differential observables and momentum anisotropy and we compare with the data of LHC experiments.
The method can be used to study other similar systems, for example the evolution of dark matter pairs in the early universe.

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