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Screening of Quarkonia in hot and dense media: historical overview and latest lattice results

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Already the first lattice QCD calculations at non-zero temperature, performed around 1980, showed that the interaction among heavy (static) quarks that are emerged into a hot and dense medium of quarks and gluons is strongly modified. The heavy quark potential is screened and will not allow for the formation of bound states when the Debye screening radius becomes smaller than the typical size of heavy quark bound states. This observation has been utilized in the seminal 1986 paper by Matsui and Satz on *J/ψ suppression by quark-gluon plasma formation* to predict the dissolution of bound states of heavy quarks at sufficiently high temperature. They established the reduction of quarkonium yields in heavy ion collisions as a sensitive tool for probing thermal properties of hot and dense matter. We discuss progress made in understanding the thermal modification of heavy quark bound states and the sequential suppression pattern, predicted for higher excited states, through refined lattice QCD calculations of temperature dependent potentials as well as through direct calculations of spectral functions.