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**Will We See a Perturbative QGP at the LHC?**

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One of the major goals of relativistic nuclear collisions is to probe the deconfined state of matter, the quark-gluon plasma (QGP). More than two decades ago it has been suggested that suppression by color screening of quarkonium states could serve as a clear signal for deconfinement. Furthermore, the so-called melting pattern of the different heavy quark-antiquark bound states could serve as a thermometer for the QGP. In order to have qualitative, as well as quantitative control of these signals, it is thus important to have a solid theoretical understanding of the quarkonium properties in a high temperature environment. In this talk I discuss our current understanding that comes from first principle calculations, like perturbative QCD and lattice QCD, and from phenomenological potential models. Recently, it has become clear, that in the weak coupling limit, where perturbative calculations are applicable, the dominant medium effect that quarkonium states undergo is thermal broadening. I will address this question, together with the effects of screening by the hot deconfined medium. I also discuss the relevance of these findings for the upcoming LHC and upgraded RHIC experiments, where not only the "traditional" J/psi suppression, but the Upsilon measurements are of importance. In particular, at LHC, where much higher temperatures are expected to be reached, thermal broadening of the Upsilon in the weak coupling limit could be used to test the possibly weakly coupled nature of the produced QGP.