APR16-2016-030056

Abstract for an Invited Paper
for the APR16 Meeting of
the American Physical Society

Phenomenology of quarkonia suppression in heavy ion collisions

MICHAEL STRICKLAND, Kent State University

Phenomenological model calculations of the suppression of quarkonia in heavy ion collisions have come a long way since the initial realization over 30 years ago that such states would "melt" in a deconfined quark-gluon plasma. Despite the initial promise, in the charmonia sector, it seems that is necessary to take into account initial cold nuclear matter effects, in-medium suppression due to disassociation processes, excited state feed down, and regeneration states through recombination of open charm and anti-charm in order to explain the observed suppression at both RHIC and LHC energies. In the bottomonia sector, the situation is not as complicated, due to there being much reduced initial state and recombination effects. However, in both cases, for reliable quantitative conclusions to be drawn, the calculation of the in-medium quarkonia suppression needs to take into account the full (3+1)-dimensional evolution of the quark-gluon plasma using relativistic hydrodynamical background models that are able to faithfully reproduce the bulk observables and to also include the non-equilibrium corrections implied by viscous hydrodynamics on the in-medium heavy quark potential itself. In this talk, I will review the various processes playing a role in quarkonia suppression. Towards the end of the talk, I will focus on the bottomonia sector which provides a much cleaner signal of in-medium suppression than the charmonia sector.