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A transport set-up for heavy-flavour observables in nucleus-nucleus collisions at RHIC and LHC

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A multi-step setup for heavy-flavour studies in high-energy nucleus-nucleus collisions is presented. The initial hard production of Q-Qbar pairs is simulated with the POWHEG pQCD event generator, interfaced with the PYTHIA parton shower.
Outcomes of the calculations are compared to experimental data in p-p collisions and are used as a validated benchmark for the study of medium effects.
In the nucleus-nucleus case, the propagation of the heavy quarks in the medium is described through the relativistic Langevin equation. The numerical results are compared to experimental data from RHIC and the LHC. In particular we show the comparisons for the nuclear modification factor and for the elliptic flow coefficient v_2 of D/B mesons and heavy-flavor electrons. Besides the results already appeared in Eur. Phys. J. C (2013) 73:2481, we will show a new comparison with data on non-prompt J/psi's from CMS and ALICE, which will are becoming available.
Furthermore, a more systematic study of the effects of heavy-flavor hadronization will be presented.

Keywords

Heavy-Flavor, Transport theory

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