

Preisträgervortrag PV X Mi 10:30 Plenarsaal
Charmonia as Probe of Deconfinement - Recent Results and Perspectives — •JOHANNA STACHEL — Physikalisches Institut, Universität Heidelberg — Trägerin der Stern-Gerlach-Medaille

Charmonia are hadrons composed of a charm quark and its anti-particle. Their production mechanism in relativistic nuclear collisions and its connection to a quark-gluon plasma (QGP) formed there has been a key topic for more than 30 years. In this talk we will demonstrate how* recent results from the Large Hadron Collider have shed new light on the topic: the presence of a QGP does not reduce but actually enhance their production at colliders since charm quarks in the

fireball are deconfined. This implies that the production rate of charmonia scales quadratically with the number of charm quarks, thereby providing a fingerprint for deconfinement and the position of the QCD phase boundary. The underlying physics is well described in the Statistical Hadronization Model for Charm (SHMC) which was proposed nearly 20 years ago* We will present the current experimental situation and the comparison to the most recent SHMC predictions. The fundamental question whether there exist colorless bound states inside the QGP is related to the experimentally challenging measurements of excited-state populations of charmonia which will be studied with precision with the* upgraded ALICE apparatus at the LHC in the coming years.