J/ψ SUPPRESSION AS A SIGNAL FOR THE QUARK–GLUON PLASMA[1]

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The search for the quark–gluon plasma using the signal of the suppression of J/ψ production in high-energy heavy-ion collisions is reviewed. Recent anomalous J/ψ suppression in high-energy Pb–Pb collisions observed by the NA50 Collaboration are examined and compared with earlier results from pA and nucleus–nucleus collisions with heavy ions of smaller mass numbers. The anomalous suppression of J/ψ production in Pb–Pb collisions can be explained as due to the occurrence of a new phase of strong J/ψ absorption, which sets in when the number of nucleon–nucleon collisions at a spatial point exceeds about 4 and corresponds to a local energy density of about 3.4 GeV/fm^3.

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