J/ψ and ϕ production from proton to Pb induced collisions at SPS CERN

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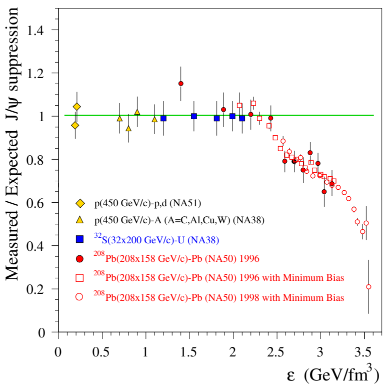
The NA38 and NA50 experiments measure muon pair production in coincidence with the transverse energy produced in ultrarelativistic heavy ion collisions. For the most central collisions, the energy density is sufficient to reach the critical temperature[1] T_c of the phase transition toward a plasma of quarks and gluons predicted by statistical QCD. Among several observables of interest in the description of the various stages of the evolution of the system, the dimuon measurement gives access to two of the possible signatures of this QGP, the J/ψ suppression and the ϕ enhancement. J/ψ suppression[2], has the unique advantage of being a potential direct measurement of the deconfinement, through the screening effect of the plasma on these $c\bar{c}$ pair produced in hard processes in the earliest times of the collision. The ϕ production is also another possible signature of the quark gluon plasma formation[3,4], which could lead to some enhancement of the strangeness production, also observed in several experiments[5]. NA50 has indeed observed an anomalous suppression of the J/ψ[6] (figure), and an increase of the ϕ. The latest updated results obtained by the na50 collaboration will be presented.



ratio of the measured over the expected yield of J/ψ, for various measurement from p-p to Pb-Pb collisions made by the NA38, NA51 and NA50 collaborations, and displaying an anomalous behaviour that could be linked to a deconfiment of quarks and gluons

References

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