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Effects of chiral symmetry restoration on dilepton production in heavy ion collisions

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Because of their weak interactions with the strongly interacting matter produced in relativistic heavy-ion collisions, dileptons provide an ideal probe of the early dynamics of these collisions. Here, we study dilepton production using a partonic transport model that is based on an extended Nambu-Jona-Lasinio (NJL) model. In this model, the in-medium quark masses decrease with increasing temperature as a result of the restoration of chiral symmetry. We find that the extracted temperature from dileptons of intermediate masses agrees well with the temperature of the partonic matter, suggesting that dilepton production can be used as a thermometer for the produced partonic matter. Our results also indicate that the extracted in-medium quark masses decrease with increasing dilepton temperature, implying that dilepton production can further serve as a probe of

chiral symmetry restoration in high energy heavy-ion collisions.

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