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Diquark frangmentation model of baryon production in ultrarelativistic nucleus-nucleus collisions KOSUKE TERASAKI, TETSUO MATSUI, Institute of Physics, University of Tokyo — Quark recombination model has been proposed to explain anomalous production of baryons with transverse momenta of a few GeV/c observed in Au+Au collisions at RHIC. The model explains the observed enhancement of baryon/meson ratio as well as the quark-number scaling of eliptic flow associated with baryons. The recent RHIC data shows, however, jet-like correlations of associated hadron production, the feature which may be more naturally explained by the quark fragmentation model. In this work, we study a new hybrid mechanism of baryon production which involves (color anti-triplet) di-quark formation by recombination of a pair of thermal quarks and its subsequent fragmentation into a baryon. This model, which we call "diquark fragmentation model," incorporates two desirable features of the recombination model and the quark fragmentation model. Our results show, however, that there is a significant reduction of baryon momentum from that of its parent diquark at the time of the diquark fragmentation, and this leads to a suppression of baryon production at relevant momentum range. We found about 10 - 20% of baryons are still produced at RHIC compared to usual recombination model at the transverse momentum of 2.5 - 4 GeV.

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