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Yields and elliptic flow of $d(\overline{d})$ and ${}^3He(\overline{{}^3He})$ in Au+Au collisions at $\sqrt{s_{NN}} = 200\ GeV$ JIANHANG ZHOU, Rice University, JACK ENGELAGE, U.C. Berkeley, HAIDONG LIU, ZHANGBU XU, Brookhaven National Lab, BNL RHIC STAR COLLABORATION — We present the transverse momentum (p_T) spectra and the coalescence parameters B_2 (related to collisional volume) for d, $\overline{d}$ ($1 < p_T < 4\ GeV/c$) and B_3 for ${}^3He$, $\overline{{}^3He}$ ($2 < p_T < 6\ GeV/c$) at mid-rapidity in Au+Au collisions at $\sqrt{s_{NN}} = 200\ GeV$ measured in the STAR experiment at RHIC. Spectra are in general agreement with the expected coalescence from nucleons with radial flow, but show softer p_T distribution than predictions from a Blast-Wave model. The coalescence parameters are found to track with pion HBT results in different collision geometry. The elliptic flow (v_2) measurement for $d(\overline{d})$ as a function of p_T is found to follow an approximate atomic mass number (A) scaling ($\chi^2/DoF = 3.1/2$) while that of ${}^3He(\overline{{}^3He})$ deviates more from the scaling ($\chi^2/DoF = 4.3/2$) . A negative v_2 has been observed for $\overline{d}$ at low p_T, consistent with large radial flow in Au+Au collisions. We note that the ratio of the primordial deuteron abundances measured in Big Bang Nucleosynthesis (BBN) to that measured in a collider experiment at zero chemical potential is $\Omega_{BBN/RHIC} = (D/H)_{BBN}/(\bar{d}/\bar{p})_{RHIC} = 0.036 \pm 0.004$. The very preliminary results from Cu+Cu collisions at $\sqrt{s_{NN}} = 200\ GeV$ will also be compared to the Au+Au system, hence providing a study to system size dependence.

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