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Semiclassical Calculations of Peripheral Heavy-Ion Collisions at Fermi Energies and the Nuclear Equation of State G.A. SOULIOTIS, D.V. SHETTY, S. GALANOPOULOS, S.J. YENNELLO, Cyclotron Institute, Texas A&M University — A systematic study of quasi-elastic and deep-inelastic collisions at Fermi energies has been undertaken at Texas A&M aiming at obtaining information on the mechanism of nucleon exchange and the course towards N/Z equilibration [1,2]. We expect to get insight in the dynamics and the nuclear equation of state by comparing our experimental heavy residue data to detailed calculations using microscopic models of quantum molecular dynamics (QMD) type. At present, we have performed detailed calculations using the code CoMD (Constrained Molecular Dynamics) of A. Bonasera and M. Papa [3]. The code implements an effective interaction with a nuclear-matter compressibility of K=200 (soft EOS) with several forms of the density dependence of the nucleon-nucleon symmetry potential. CoMD imposes a constraint in the phase space occupation for each nucleon, effectively restoring the Pauli principle at each time step of the collision. Results of the calculations and comparisons with our data will be presented and implications concerning the isospin part of the nuclear equation of state will be discussed. [1] G.A. Souliotis et al., Phys. Rev. Lett. 91, 022701 (2003). [2] G.A. Souliotis et al., Phys. Lett. B 588, 35 (2004). [3] M. Papa et al., Phys. Rev. C 64, 024612 (2001).

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