

Abstract Submitted  
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**The influence of cluster emission and the symmetry energy on neutron - proton spectral double ratios** WILLIAM LYNCH, JINA, NSCL, and Dept. of Physics and Astronomy, MSU, East Lansing, MI 48824, USA, YINGXUN ZHANG, JINA; NSCL; China Institute of Atomic Energy, Beijing, China, PAWEL DANIELEWICZ, JINA, NSCL, and Dept. of Physics and Astronomy, MSU, East Lansing, MI 48824, USA, MICHAEL FAMIANO, Physics Dept, WMU, Kalamazoo, MI, USA, ZHUXIA LI, China Institute of Atomic Energy, Beijing, China, BETTY TSANG, JINA, NSCL, and Dept. of Physics and Astronomy, MSU, East Lansing, MI 48824, USA — The emissions of neutrons, protons and bound clusters from central  $^{124}\text{Sn}+^{124}\text{Sn}$  and  $^{112}\text{Sn}+^{112}\text{Sn}$  collisions are simulated using the Improved Quantum Molecular Dynamics model for two different symmetry energy functions with different density dependencies. The calculated neutron – proton spectral double ratios for these two systems are sensitive to the density dependence of the symmetry energy. The effect of cluster emission and comparisons to other transport calculations such as IBUU04 will be presented. This work is supported by the National Science Foundation under Grants PHY-0555893, PHY-0606007 and PHY 0216783.

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