

Abstract Submitted
for the TSS21 Meeting of
The American Physical Society

Smashing Gold on Gold: Producing and Identifying Trans-Target Multinucleon Transfer Products¹ A. HOOD, A. ABBOTT, J. GAUTHIER, K. HAGEL, B. HARVEY, A. HANNAMAN, A. JEDELE, Y.-W. LUI, A. MCINTOSH, L. MCINTOSH, M. SORENSEN, Z. TOBIN, R. WADA, A. WAKHLE, S. YENNELLO, Cyclotron Institute, Texas A&M University, College Station, TX 77843 — Multinucleon transfer (MNT) reactions may offer a way to produce new neutron-rich isotopes of known and yet-to-be discovered elements in the heavy and super-heavy mass regimes. Despite decades of study, many open questions remain about MNT reactions. For example, the mechanisms of multinucleon transfers in low-energy collisions of very heavy ions are not well understood. Experimental data are imperative to verify and refine theoretical models. We plan to use an active catcher array to study short-lived trans-target MNT products of the reaction $^{197}\text{Au} + ^{197}\text{Au}$, with a pulsed beam. These products, which result from a transfer of $\Delta Z = 9 - 11$ protons and $\Delta N = 14$ neutrons, undergo three rapid α -decays. To identify these products, we will perform a search of single digitized waveforms for correlated α -decays of parent and daughter nuclei, thereby establishing decay chains.

¹This work is supported by the U.S. DoE, NNSA under award DE-NA0003841, the CENTAUR collaboration, the U.S. DoE, Office of Science, Office of Nuclear Physics under award DE-FG02-93ER40773, and the Welch Foundation Grant A-1266.

Ashley Hood
Texas A&M University

Date submitted: 15 Mar 2021

Electronic form version 1.4