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Analysis of quasifission competition in fusion reactions forming heavy nuclei KALEE HAMMERTON, ZACHARY KOHLEY, DAVE MORRISSEY, ADITYA WAKHLE, KRYSTIN STIEFEL, National Superconducting Cyclotron Laboratory, DAVID HINDE, MAHANANDA DASGUPTA, ELIZABETH WILLIAMS, CEDRIC SIMENEL, IAN CARTER, KAITLIN COOK, DONGYUN JEUNG, DUC HUY LUONG, STEVEN MCNEIL, CHANDANI PALSHETKAR, DOMINIC RAFFERTY, The Australian National University — Heavy-ion fusion reactions have provided a mechanism for the production of superheavy elements allowing for the extension of both the periodic table and chart of the nuclides. However, fusion of the projectile and target, forming a compound nucleus, is hindered by orders of magnitude by the quasifission process in heavy systems. In order to fully understand this mechanism, and make accurate predictions for superheavy element production cross sections, a clear description of the interplay between the fusion-fission and quasifission reaction channels is necessary. The mass-angle distributions of fragments formed in 8 different Cr + W reactions were measured at the Australia National University in order to explore the N/Z dependence of the quasifission process. Two sets of data were measured: one at a constant energy relative to the fusion barrier [Hammerton et al. Phys. Rev. 91, 041602(R) (2015)] and one at a constant compound nucleus excitation energy. The results of this analysis will provide insight into the effect of using more neutron-rich beams in superheavy element production reactions.

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