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Proximity decay and the Tidal effect[1] A.B. MCINTOSH, R.T. DE SOUZA, S. HUDAN, C.J. METELKO, R. ALFARO, B.P. DAVIN, Y. LAROCHELLE, H. XU, L. BEAULIEU, T. LEFORT, R. YANEZ, Department of Chemistry and IUCF, Indiana University, R. CHARITY, L.G. SOBOTKA, Washington University in St. Louis, T.X. LIU, X.D. LIU, W.G. LYNCH, R. SHOMIN, W.P. TAN, M.B. TSANG, A. VANDER MOLEN, A. WAGNER, H.F. XI, NSCL, Michigan State University — An excited nucleus can decay by emission of clusters. These clusters may be excited and themselves subsequently undergo particle decay. Peaks in the relative energy spectrum of the secondary decay products indicate resonance reflecting the discrete internal structure of the primary emitted cluster. Resonance spectroscopy can be used, for example, to determine the temperature of the initial source within a statistical approach. To date however, the effect of the field of the emitting nucleus on the decay of the cluster has been largely neglected. Tidal effects result in the correlation of the relative energy with emission angle as a function of the decay time. We explore the influence of the external Coulomb field on the decay of the first excited state of ^{8}Be in the reaction ^{114}Cd + ^{92}Mo at E/A=50 MeV. Comparison of the experimental data with the predictions of a simple Coulomb trajectory model indicate that the interaction with the nuclear surface (proximity interaction) on the emitted cluster is not negligible.

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