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Search for the fade out of a collective enhancement of the nuclear level density L.G. SOBOTKA, S. KOMAROV, R.J. CHARITY, C.J. CHAIRA, W. REVIOL, D.G. SARANTITES, Washington University, A.L. CARALEY, State University of New York, Oswego, M.P. CARPENTER, D. SEWERYNIAK, Argonne National Laboratory — The fade out of a collective enhancement of the nuclear level density is predicted (by an SU3 shell model) to give rise to a clear signature in the evolution of the spectral shape of evaporated charged particles with excitation energy. We have searched for this signature in the spectra of α particles emitted from ^{178}Hf compound nuclei, with excitation energies between 54 and 124 MeV, formed in ^{18}O + ^{160}Gd fusion reactions. Gammasphere provided the ability to construct channel-specific α-particle spectra and thus allow for a comparison to statistical model calculations on this basis. The expected clear signature of a rapid fade out of a collective enhancement is not found. The data are best reproduced by calculations which do not explicitly consider a collective enhancement and its fade out.

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