

Abstract Submitted
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Fission and the Termination of the Astrophysical r-Process PETER MOLLER, Theoretical Division, Los Alamos National Laboratory, KARL-LUDWIG KRATZ, KHALIL FAROUQI, BERND PFEIFFER, Institut für Kernchemie, Universität Mainz, Mainz, Germany — Recent significant progress in modeling the fission process allows us to model the r-process termination more realistically than previously. In the macroscopic-microscopic approach we now calculate fission potential-energy surfaces as functions of millions of different nuclear shapes [1]. In contrast other calculations have only considered around 1000 shapes.. We have used our recently developed approach to calculate barrier heights for more than 1000 nuclei The inner barrier has been studied in a 3-dimensional deformation space, including axial asymmetry; for the outer barrier region it is necessary to use a 5-dimensional deformation space. Once we have established which of the inner or outer barrier peaks defines the fission-barrier height we perform r-process calculations taking into account fission at the termination of the r-process path. First results and conclusions will be presented.

P. Moller, D. G. Madland, A. J. Sierk, and A. Iwamoto, Nature 409 (2001)785

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