

Abstract Submitted
for the DNP10 Meeting of
The American Physical Society

The effect of gamma deformation on the height of the fission barrier in actinides¹ HAZEM ABUSARA, ANATOLI AFANASJEV, Mississippi State University, PETER RING, Technische Universitat Munchen — Systematic calculations of the fission barriers with allowance of triaxial deformation have been performed for the first time within the covariant density functional theory. Pairing is treated within the BCS approximation using seniority zero forces adjusted to empirical values of the gap parameters. Different pairing schemes and their impact on inner fission barriers have been studied in detail. The covariant density functional theory is successful in reproducing the height of the fission barriers at a level of accuracy comparable with the best non-relativistic phenomenological macroscopic+microscopic approaches. Our analysis of the results of calculations shows that allowing triaxial deformation reduces the height of the inner barrier by 1-3 MeV. The fission path between the first and second axially deformed minima goes through the valley characterized by γ -deformation close to 10° .

¹This work has been supported by the U.S. Department of Energy under the grant DE-FG02-07ER41459 and by the DFG cluster of excellence Origin and Structure of the Universe (www.universe-cluster.de).

Hazem Abusara
Mississippi State University

Date submitted: 30 Jun 2010

Electronic form version 1.4