ID de Contribution: **23** Type: **Non spécifié**

# Fission fragment angular momenta generated during overdamped motion

*jeudi 23 juin 2022 10:05 (30 minutes)*

B.G. Carlsson, T. Døssing, J. Randrup, S. Åberg
T. Døssing1, B.G. Carlsson2, J. Randrup3, and S. Åberg2
1Niels Bohr Institute, University of Copenhagen, 2100 Copenhagen Ø, Denmark,
2Mathematical Physics, Lund University, 221 00 Lund, Sweden,
3Nuclear Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA

The angular momentum of fission fragments is calculated for thermal neutron induced fission of 236U. The basis is the scission shapes and internal excitation energies calculated previously by the Metropolis random walk realization of overdamped motion [1]. At scission, the statistical excitation, described by level densities of the emerging fragments, generate the angular momentum. It is argued that the distribution of angular momentum is basically two-dimensional, with the fragments carrying zero or very small angular momenta in their direction of motion.
First, we perform an evaluation based on the Fermi gas description with excitation energies from measured neutron multiplicities. We then include shell structure and utilize level densities calculated combinatorically versus excitation energy and angular momentum [2]. Calculated average angular momenta are compared to recent data [3], and overall, a good agreement is found. The observed saw-tooth behavior of the average angular momentum as function of mass number is discussed in connection to the similar behavior of the average neutron multiplicity. Our calculations underestimate the amplitudes of both saw-tooth curves. The magnitudes of the angular momenta of light and heavy fragments are weakly correlated, in accordance with data.

**Auteurs principaux:** ABERG, Sven (Lund University); DOSSING, Thomas (Niels Bohr Institute)

**Orateur:** DOSSING, Thomas (Niels Bohr Institute)

**Classification de Session:** Shape dynamics models