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DATE: 4 January 2007
TO: See distribution list below
FROM: H. Henriksson
SUBJECT: Dictionary addition: Quaternary fission (dict. 31 and 236)

The following reaction code is proposed:

QTR Quaternary fission

This was for example defined in an article from 2003 by Gönnerwein et al in Acta Physica Hungarica A) Heavy Ion Physics, 18, 2-4 (2003) 419 - 425

Abstract:

Quaternary fission is a nuclear reaction where the two customary fragments from fission are accompanied by two light charged particles. The process has been investigated at the ILL, Grenoble, for thermal neutron induced fission of ²³³U and ²³⁵U. The light particles were identified to be alpha particles and H isotopes (mostly tritons). Two different types of processes could be disentangled: in one of these processes all four charged particles are born in coincidence while the second process is in fact merely a special case of ternary fission where the ternary particle decays into two charged particles before reaching the detectors.

The reaction is compiled in the proposed EXFOR work 22925, in J,EPJ/A,24,379,2005

Additional codes are also needed in dictionary 236:

TER,KE Kinetic energy for ternary fission
QTR,KE Kinetic energy for quaternary fission
QTR,FY Fission product yield of quaternary fission

Proposed text for LEXFOR under the paragraph on FISSION:

Quaternary fission is a nuclear reaction where the two customary fragments from fission are accompanied by two light charged particles. Two different types of processes can be disentangled, namely a process where all four charged particles are born in coincidence and a process of ternary fission where the ternary particle decays into two charged particles in a short time scale.

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