

Abstract Submitted
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Prospects of Neutron Triggering of Isomer Decays IAN THOMPSON, EDWARD HARTOUNI, MAU CHEN, JUTTA ESCHER, ALEX LOSHAK, PETR NAVRATIL, ERICH ORMAND, JASON PRUET, TZU WANG, Lawrence Livermore National Laboratory — The nucleus $^{178}\text{Hf}^{m2}$, with a 16+ isomeric state at 2.46 MeV of a half-life of 31 years, has been proposed as a means of storing energy. Many attempts have been made to determine whether this energy can be released by low-energy X-rays, but few unambiguous experimental results have been found: for a review see [1]. Neutrons have been also proposed [3] as a trigger, since they can interact inelastically with the isomer state to produce exit channels with positive Q-value, in what is called ‘super-elastic scattering’ or ‘inelastic neutron acceleration’. Super-elastic scattering has been observed for neutron scattering on $^{177}\text{Lu}^m$ [3] and $^{180}\text{Ta}^m$ isomeric states [4]. We report on results of direct-reaction and Hauser-Feshbach calculations for neutron super-elastic scattering, where we ignore K-hindrance factors in order to obtain an upper-bound on the energy that may be released by the outgoing neutrons. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. [1] J.J. Carroll, *Laser Phys. Lett.* **1**, 275–281 (2004) [2] G.V. Muradian, unpublished report (Moscow, 2004). [3] O. Roig *et al*, *Phys. Rev. C* **74**, 054604 (2006) [4] S. A. Karamian, *et al*, *Phys. Rev. C* **59** (1999) 755

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