Abstract Submitted
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Study of high-j neutron excitations outside ^{136}Xe[1] R. TALWAR, B. P. KAY, Argonne National Laboratory, A. J. MITCHELL, Australian National University, S. ADACHI, Research Center for Nuclear Physics, Osaka University, J. P. ENTWISLE, University of Manchester, Y. FUJITA, G. GEY, S. NOJI, H. J. ONG, Research Center for Nuclear Physics, Osaka University, J. P. SCHIFFER, Argonne National Laboratory, A. TAMII, Research Center for Nuclear Physics, Osaka University — The character of single-neutron excitations outside of $N = 82$ has been studied using nucleon transfer reactions in terms of the energy centroid of their strength as well as the fragmentation of this strength among the actual states of the nucleus. However, extending the systematic study of the $N = 83$ isotones to ^{137}Xe has been challenging due to xenon being a gas at room temperature. Though several attempts have been made, a quantitative determination of the spectroscopic factors for the neutron $9/2^-$ and $13/2^+$ excitations in ^{137}Xe is still lacking. In the present work, we report on a study of the ^{136}Xe(α,^{3}He)^{137}Xe reaction carried out at 100 MeV to probe the $\ell = 5$, $9/2^-$ and $\ell = 6$, $13/2^+$ single-neutron excitations. The experimental technique and results will be presented discussing them in context of the evolution of these single-neutron excitations and the influence of the tensor interaction on the neutron single-particle states as the proton orbits are filling.

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