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Study of low-lying excited states in ^{139}La via the $(n, n'\gamma)$ reaction¹ S.F. ASHLEY, J.N. ORCE, B. CRIDER, E. ELHAMI, M.T. MCELLISTREM, S. MUKHOPADHYAY, Dept. of Physics and Astronomy, University of Kentucky, Lexington KY 40506-0055, E. PETERS, Dept. of Chemistry, University of Kentucky, S.W. YATES, Dept. of Physics and Astronomy and Dept. of Chemistry, University of Kentucky — An observable result of Pauli-blocking in atomic nuclei [1] is a reduction in the transition rates between equivalent phonon excitations in odd-A nuclei and even-even nuclei. In particular, studies of low-lying $J^\pi = 1^-$ states in ^{141}Pr [2,3], imply that the $B(E1 : 1^- \rightarrow 0_1^+)$ values associated with decays from states with $[[2^+ \otimes 3^-] \otimes \text{particle}]_{J^\pi=1^-}$ configurations are $\sim 52 - 83\%$ of the $B(E1 : 1^- \rightarrow 0_1^+)$ value associated with decay from the $[2^+ \otimes 3^-]_{J^\pi=1^-}$ state in ^{140}Ce . This presentation will focus on lifetimes deduced from an angular-distribution measurement of ^{139}La , via the $(n, n'\gamma)$ reaction with $E_n = 2.0$ MeV, and a comparative interpretation of Pauli-blocking in ^{139}La and ^{141}Pr will be drawn.

[1] V.G. Soloviev, Theory of Atomic Nuclei: Quasiparticles and Phonons, IOP Publishing (Bristol, United Kingdom), (1992)

[2] M. Scheck et al., Phys. Rev. C **75**, 044313 (2007)

[3] M. Scheck et al., submitted to Phys. Rev. C

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Prefer Oral Session
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