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Rotation in near and beyond proton and neutron drip line nuclei[1]

ANATOLI AFANASJEV, SAJA TEETI, AHMAD TANINAH, Mississippi State Univ, NAOYUKI ITAGAKI, Yukawa Institute for Theoretical Physics, Japan — Two new mechanisms active in rotating nuclei located in the vicinity of neutron and proton drip lines have been discovered [1,2]. Strong Coriolis interaction acting on high-j orbitals transforms particle-unbound (resonance) nucleonic configurations into particle-bound ones with increasing angular momentum. The point of the transition manifests the birth of particle-bound rotational bands. Alternative possibility of the transition from particle-bound to resonance rotational band (the death of particle-bound rotational bands) with increasing spin also exists but it is less frequent in the calculations. The birth of particle-bound rotational bands provides a mechanism for the extension of nuclear landscape beyond its boundaries in non-rotating nuclei. The mapping of nuclear landscape boundaries in rotating nuclei and systematic search of best candidates for experimental observation of these two phenomena are in progress [3]. Their results will be presented. [1] A.V.Afanasjev, N.Itagaki and D.Ray, Phys.Lett. B 794 (2019) 7. [2] A.V.Afanasjev, S.E.Agbemava and A.Taninah, Acta Physica Polonica, in press [3] S. Teeti, A. Taninah and A.V.Afanasjev, in preparation

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