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Extension of the nuclear landscape beyond spin-zero limits: rotation in extremely proton-rich nuclei".[1] SAJA TEETI, AHMAD TANINAH, ANATOLI AFANASJEV, Mississippi State University — Recent investigations reveal a number of physical mechanisms by which it is possible to extend the nuclear landscape beyond spin zero limit. One of these is related to so-called birth of particle-bound rotational bands in neutron-rich nuclei which has been first suggested in Ref.[1]. In this mechanism, strong Coriolis interaction acting on high-j orbitals transforms particle-unbound(resonance) nucleonic configurations into particle-bound ones with increasing angular momentum. A similar mechanism is active also in the nuclei in the vicinity of proton drip line[2] but it is modified the presence of the Coulomb barrier. As a result, particle-unbound part of the band will have discrete rotational states which can decay by proton emission. A systematic investigation of this phenomenon has been performed in proton rich even-even $Z = 4 - 36$ nuclei within the framework of cranked relativistic mean field theory with the goals to find the general features of this phenomenon and the best candidates for experimental observations. One of interesting predictions is a new phenomenon of rotation-induced proton halos which is active in some nucleonic configurations. [1] A. V. Afanasjev, N. Itagaki and D. Ray, Phys. Lett. B 794, 7 (2019) [2] A. V. Afanasjev, S.E. Agbemava and A. T

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