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Hyperheavy nuclei in covariant density functional theory: the existence and stability[1] ABHINAYA GYAWALI, SYLVESTER AGBEMAVA, ANATOLI AFANASJEV, Mississippi State University — The limits of existence of finite nuclei is one of interesting questions of modern low-energy nuclear physics. A lot of theoretical efforts have been dedicated to the study of superheavy nuclei with $Z < 126$ [1,2]. However, very little is known about existence and stability of hyperheavy nuclei with proton numbers $Z > 126$. Almost all investigations of such nuclei consider only spherical shapes for the ground states [2]. However, the study of superheavy nuclei [2] indicates that such assumption leads in many cases to misinterpretation of the situation. Thus, we performed a systematic investigation of such nuclei for proton numbers from 122 up to 184 and from two-proton drip line up to two-neutron one within the axial relativistic Hartree-Bogoliubov theory [3]. The calculations are carried out in large deformation space extending from megadeformed oblate shapes via spherical ones up to scission configuration. The stability of such nuclei against fission (including triaxial and octupole shapes) and beta-decays have been investigated and the islands of their stability have been defined. [1] S.E. Agbemava et al, Phys. Rev. C 92, 054310 (2015). [2] M. Bender et al, Phys. Lett. B 515, 42 (2001). [3] A. Gyawali et al, in preparation.

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