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Nuclear landscape and drip lines in covariant density functional theory DEBISREE RAY, ANATOLI AFANASJEV, SYLVESTER AGBEMAVA, Mississippi State University, PETER RING, (Technische Universit at Munchen, Germany) — Neutron and proton drip lines represent the limits of nuclear landscape. While proton drip line is measured experimentally, the location of neutron drip line for absolute majority of elements is based on theoretical predictions which involve extreme extrapolations. The first ever systematic investigation of the location of the proton and neutron drip lines in the relativitic Hartree-Bogoliubov (RHB) approach has been performed by us employing the set of modern covariant density functional parametrizations. Separable pairing is used in particle-particle channel of the RHB. This study covers all even-even nuclei with $Z \leq 120$ between proton and neutron drip lines. The accuracy of the description of ground state (masses, two-particle separation energies, deformations, radii etc) properties of known nuclei and its dependence on parametrization have been analysed.Statistical errors in the predictions of neutron-drip line are established within the RHB. The comparison with the results of non-relativistic approaches (Skyrme density functional theory, macroscopic+microscopic approach) allows to define systematic errors in the predictions of neutron-drip line. * This work has been supported by the U.S. DOE under the grant DE-FG02-07ER41459 and by an allocation of advanced

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