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Fitting protocols, statistical errors, and parametric correlations in covariant energy density functionals[1] AHMAD TANINAH, ANATOLI AFANASJEV, SYLVESTER AGBEMAVA, Mississippi State Univ — Statistical errors in ground state observables of spherical even-even nuclei and their propagation to the limits of nuclear landscape have been investigated in covariant density functional theory (CDFT) for the first time. In this study we consider only covariant energy density functionals with nonlinear density dependency. Statistical errors for binding energies and neutron skins significantly increase on approaching the two-neutron drip line [1]. On the contrary, such a trend does not exist for statistical errors in charge radii and two-neutron separation energies [1]. Statistical errors in the description of physical observables related to the ground state and single-particle degrees of freedom are typically substantially lower in CDFT as compared with Skyrme density functional theory. The parametric correlations between model parameters are studied in several classes of covariant density functional theory; their removal allows to reduce the number of independent parameters in the functionals to 5 or 6 [1,2]. [1] S. E. Agbemava, A. V. Afanasjev, and A. Taninah, Phys. Rev. C 99, 014318 (2019). [2] A. Taninah, S. E. Agbemava, A. V. Afanasjev, and P. Ring, Phys. Lett. B 800, 135065 (2020).

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