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Phenomenological methods for atomic nuclei masses evaluation in drip lines area

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In this work we obtain theoretical nuclear masses (or binding energy) and localize proton and neutron drip lines using method of local mass relations. This method demonstrates good applicability for atomic mass predictions [1, 2, 3]. For estimates we use an approximation of the formula that describes the residual *np*-interaction, the features of which were discussed in detail in the previous work [4].
In addition, we show results obtained by a completely different method –machine learning based on support vector regression. We predict the specific binding energies based on the specific binding energies of several neighboring nuclei and run several iterations of machine learning to reach an area far from the stability line. Comparison with estimates of other works, which are based on other approaches, showed reliable accuracy of the results obtained.

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