In memory of Lubomir Aleksandrov

Improved Generalization of the Bethe Weizsacker Mass Formulae

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An explicit improved numerical generalization of Bethe-Weizsacker mass formula is presented. This formula describes the experimental values of 2654 nuclear masses in AME2012 nuclear database with accuracy less than 2.2 MeV, starting from the deuterium $Z = 1$ and $N = 1$.

In the obtained generalization of the Bethe-Weizsacker formula the influence of the magic numbers and the boundaries of their influence between them is defined for nine proton (2, 8, 14, 20, 28, 50, 82, 108, 124) and ten neutron (2, 8, 14, 20, 28, 50, 82, 124, 152, 202) magic numbers.