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Current status of nuclear mass formula

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Abstract

The current status of nuclear mass formula is examined. The variation of neutron separation energy S_n with neutron number N for a fixed proton number Z and proton separation energy S_p with proton number Z for a fixed neutron number N is plotted for Super Heavies by taking values for S_n and S_p from experiment and systematics. Both the graphs show odd-even staggering. The mass values calculated using Liquid Drop formula do not agree exactly with the experimental mass values and those expected from systematics; the difference between them may be due to the shell corrections. So there is a need to refine the Liquid Drop formula to include the shell corrections. This addition may provide accurate mass values.