Evaluation of the Microscopic Component of the Nuclear Binding Energy as Function of F-Spin in the Valence Shells

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A smooth dependance of the microscopic component of the nuclear binding energy has been obtained using a simple quadratic expansion of the third projection of the F-spin and the proton number. This result follows from the established relation between the F-spin and the promiscuity factor (P), which has been shown describe collectivity regardless of the deformation or mass region. The obtained relation allows for the overall fit of 135 coefficients to reproduce 2317 nuclear masses with standard deviations on the order of 350 keV, within a 15 shell zones, where the established subshell closures are taken into account. The predictive power of the new approach is discussed, and tables are included for the predictions of masses which are presently unmeasured, or which have considerable experimental uncertainties.