

# MEAN-FIELD APPROXIMATION FOR FINITE NUCLEI AND NUCLEAR MATTER

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We discuss a realistic case of fitting the values of the Skyrme parameters to an extensive set of experimental data on the ground-state properties of many nuclei ranging from normal to exotic ones. We include, in particular, the radii for valence neutron orbits and the breathing-mode energies for several nuclei. We further constrain the values of the Skyrme parameters by requiring positive values for the slope of the symmetry energy  $S$ , the enhancement factor,  $\kappa$  associated with the isovector giant dipole resonance, and the Landau parameter  $G_0'$ . We also present results of Hartree-Fock based random phase approximation for the excitation strength function of the breathing mode and discuss the current status of the nuclear matter incompressibility coefficient.