Anticipating what follows, we list here for the sake of completeness the values of the bulk and surface properties of nuclear matter, as deduced from the above parameter set:

Radius constant of standard nuclear matter	$r_0 = 1.14$ fm
Surface width [23] (diffuseness)	$b_0 = 1.0$ fm
Width after folding-in nucleon form factor	$b = 1.11$ fm
Volume binding energy coefficient	$a_1 = 16.04$ MeV
Symmetry energy coefficient	$J = 32$ MeV
Surface energy coefficient	$a_2 = 18.5$ MeV
Curvature correction coefficient	$a_3 = 12$ MeV
Compressibility coefficient	$K = 234$ MeV
Effective surface stiffness coefficient	$Q = 34$ MeV
Density-symmetry coefficient	$L = 50$ MeV
Symmetry anharmonicity coefficient	$M = 7$ MeV .

[For the definitions of the last three (Droplet Model) coefficients consult [19]. The coefficient Q plays a role similar to the surface symmetry energy coefficient κ_s.]

5. The Euler-Lagrange equations

With the interaction specified, the total energy of the Thomas-Fermi nucleus can be written down as a functional of the densities $\rho_n(\bar{r})$, $\rho_p(\bar{r})$ and a function of the six interaction parameters:

$$E\left[\rho_n(\bar{r}),\rho_p(\bar{r});a,\alpha,B,\gamma,\xi,\zeta\right]=\int d^3r\,\mathscr{E}\left[\rho_n(\bar{r}),\rho_p(\bar{r})\right] \tag{7}$$

The requirement that the energy be stationary with respect to small particle-preserving variations $\delta\rho_n(\bar{r})$, $\delta\rho_p(\bar{r})$ demands that the functional derivatives of $\mathscr{E}$ be constant:

$$\frac{\delta\mathscr{E}}{\delta\rho_n}=L_n \quad , \quad \frac{\delta\mathscr{E}}{\delta\rho_p}=L_p \ , \tag{8}$$