Figure captions

Fig. 1. The upper part shows a comparison between the Thomas-Fermi and the Hartree densities (multiplied by r^2) of the electrons in a Hg atom [5]. The lower part shows Fermi's prediction of the number of p-electrons as a function the atomic number Z (solid line) and the actual numbers (dashed line) [4].

Fig. 2. The binding energy of standard nuclear matter versus the cube root of the relative density, as given by Eq. (9), for different values of the compressibility K. (From [20].)

Fig. 3. The relative energy per particle of neutron matter vs. the density parameter Φ, as given by Eq. (15), for different values of the parameter ξ. For each value of ξ the other interaction parameters were re-adjusted to keep the binding, density and symmetry energy of standard nuclear matter fixed. (From [20].)

Fig. 4. The energy per particle of nuclear matter according to Eq. (16), vs. the relative density parameter Ω, for different values of the relative neutron excess $\delta \equiv (\rho_n - \rho_p)/(\rho_n + \rho_p)$. The squares are the theoretical estimates from [1]. This figure is from the 1990 version of our model [20] in which the parameters were adjusted for approximate agreement of the $\delta = 0$ curve with [1]. The current model, in which no such constraint was imposed, is illustrated in Fig. 16.

Fig. 5. The Thomas-Fermi charge distributions for ^{56}Fe, ^{124}Sn and ^{109}Bi (solid lines) are compared with electron scattering measurements as represented by a Woods-Saxon fit (dot-dashed) or a three-parameter Gaussian fit (dashed) to the data. The current parameter set, listed in Sec. 4, was used.

Fig. 6. Each set of symbols represents the result of calculating the surface energy of semi-infinite nuclear matter using interaction parameters adjusted to give the same bulk binding and density, as well as the same surface width b, but different compressibility K. There results an astonishingly linear relation between K and the surface coefficient a_2. (From [20].)