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Binding-Energy Systematics of 0^+, 2^+, 3^-, and 4^-, T=0 States of Even-Even Self-Conjugate Nuclides from ^{16}O to ^{40}Ca FRIEDRICH EVERLING, NCSU, Raleigh, NC, and TUNL, Durham, NC, USA (Early affiliation; present address: Ringheide 24 f, 21149 Hamburg, Germany; everlingf@aol.com) — Binding energies of self-conjugate even-even nuclides are plotted as $-B^*+(9.5\ \mathrm{MeV})\cdot A$ versus mass number A, where B^* is the binding energy of ground states and levels. A diagram from A=0 to 76 mainly for ground states shows a subshell systematics. In a diagram from A =16 to 40, established and hypothetical 0^+ levels are shown; 24 states of supposed $1d_{5/2}$, $2s_{1/2}$, and $1d_{3/2}$ subshell occupations are connected by almost linear trends. Surprisingly, early insufficient measurements at $E_x = 0.65$ MeV in ^{20}Ne and 0.5 (and 0.43) MeV in ^{32}S fit the trends. A diagram for the 0^+, 2^+, 4^+, and 6^+ band from ^{16}O to ^{28}Si suggests the 0^+ head in ^{20}Ne to be at 0.65 MeV. A systematics of 2^+ states supports both levels. A plot of 3^- and 4^- states contains two pairs of nearly parallel and linear 3-point trends. Two odd $2s_{1/2}$ and $1f_{7/2}$ nucleons couple to 3^- and (not completely established) to 4^- in trends $\approx$1.6 and $\approx$1.7 MeV above. Below each of the two pairs of trends, the 0^+ trends are expected to be also nearly linear, which they are with these complementary ^{20}Ne and ^{32}S levels. A table suggests a total of 18 important experimental investigations.

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