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Magnetic Moments and Symmetries for even-even Argon Isotopes LARRY ZAMICK, Rutgers University, SHADOW ROBINSON, Millsaps College, YITZHAK SHARON, Rutgers University — In a single-j-shell calculation the spectra, g factors, and B(E2)'s of ^{40}Ar and ^{44}Ar are identical. Thus, deviations from this equivalence in the experimental data are due to configuration mixing. We do large-scale shell model calculations for the even-even Argon isotopes with the two interactions WBT and SDPF. The calculated g factors of the 2_1^+ states from A=38 to A=46 are, respectively, with WBT (.308,-.197,-.095,-.022,.100) and with SDPF (.319,-.228,-.084,-.040,.513). The two interactions agree very well except for ^{46}Ar. For this nucleus the probability in the 2_1^+ wave function of the configuration where the neutrons form a closed $f_{7/2}$ shell, but a proton is excited from $s_{1/2}$ to $d_{3/2}$, is 2.5% with WBT but 21.8% with SDPF. This difference may be related to the rapid change with N of the J=$(3/2)^+$ - J=$(1/2)^+$ splittings in the odd-A Potassium isotopes. The respective calculated splittings from A=41 to A=49 in keV are with WBT (1106,1109,871,507,729) and with SDPF (854,672,345,-320,78), while the experimental ones are (980,561,474,-360,200). We see a crossover at A=47 which is given correctly by SDPF but not by WBT. This could help explain the large difference in the g(2_1^+) factors for ^{46}Ar with these two interactions. It will be interesting to see what the experimental results will be.

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