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Selection Rules for ^{48}Cr[1] ARUN KINGAN, Rutgers University - Piscataway, MICHAEL QUINONEZ, Michigan State University, XIAOFEI YU, LARRY ZAMICK, Rutgers University - Piscataway — In the single j shell ^{48}Cr is the first even-even nucleus for which there are T=0 (isoscalar) J=1^+ states and T=1 J=0^+ states. These states are studied here. This nucleus, in the $f_{7/2}$ model space, is mid-shell for both neutrons and protons and this leads to many selection rules. Even though seniority is a good quantum number for identical particles in this shell this is in general not true for a system of both neutrons and protons. Thus, in ^{48}Cr neither the seniority of the neutrons, the protons or the total are good quantum numbers. However S=(-1)ˆ((v_p+v_n)/2) is a good quantum number. Non-zero B(M1) require that S does not change, but for nonzero B(E2)'s S must change sign. A scissors mode like excitation involving both spin and orbit is identified.

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