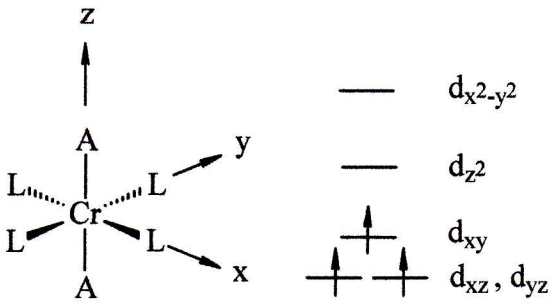
1. Six-coordinate Cr(III) complexes of the type *trans*-$[CrL_4A_2]^{n+}$ generally have magnetic moments consistent with three unpaired electrons, which suggests occupancy of the *d* orbitals as shown to the right. In principle, a complex with only one unpaired electron could be generated by a suitable choice of L and A such that the separation between the d_{xy} and the degenerate d_{xz}, d_{yz} orbitals becomes larger than the spin pairing energy.



Assume that L is a σ-donor only ligand. Would strong π donors OR strong π acceptors be the best choice for axial ligand A in order to increase the separation of the d_{xy} and the degenerate d_{xz}, d_{yz} orbitals? Explain the basis for your choice being careful to: 1) explicitly indicate the relative energies of the metal and ligand π orbitals and 2) explicitly indicate the specific ligand orbital-metal orbital interactions that will influence the relative energies of the d_{xy} and the degenerate d_{xz}, d_{yz} orbitals.