

① Write the Slater Determinant for the ground state of C^{2+} .

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② Why is the Slater determinant useful?

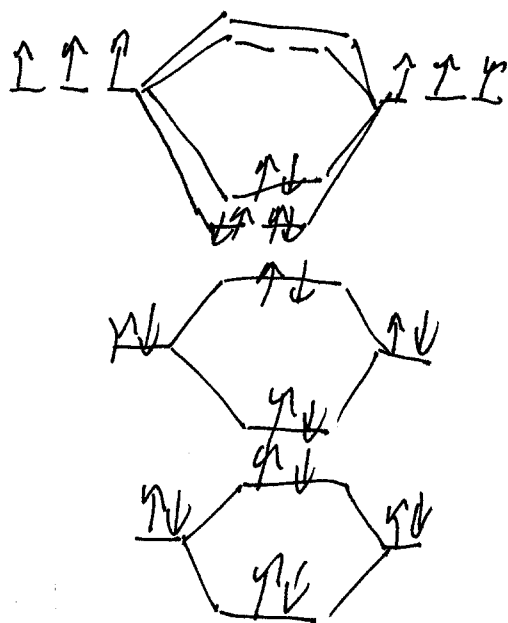
The Slater determinant automatically gives an antisymmetric wavefunction with respect to exchange of electrons. This is in line with the Pauli exclusion principle,

③ If $n=4$ what are the allowed values of m_l ?

$$l = 0, 1, 2, 3$$

$$\text{so } m = 0, \pm 1, \pm 2, \pm 3$$

④ Draw the MO diagram for N_2



Not paramagnetic

$$B.O. = \frac{1}{2}(10 - 4) = \boxed{3}$$