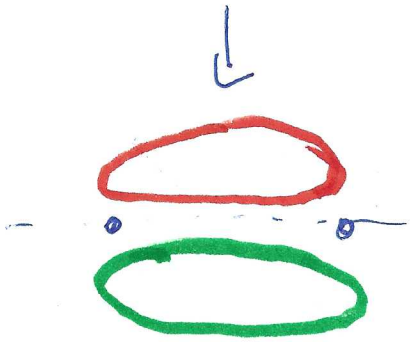
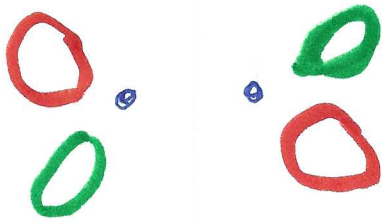
$p_{x,y}$

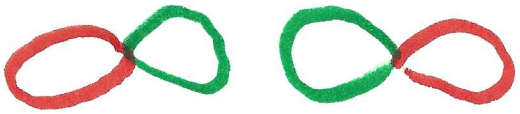


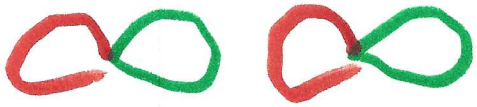
π_u

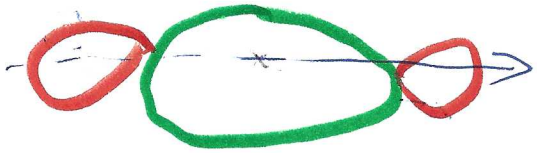


π_g^*

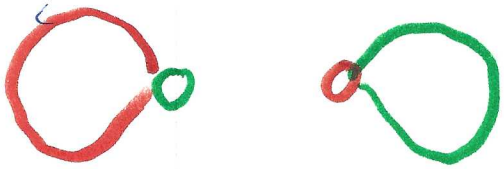
p_z







σ_g



σ_u^*

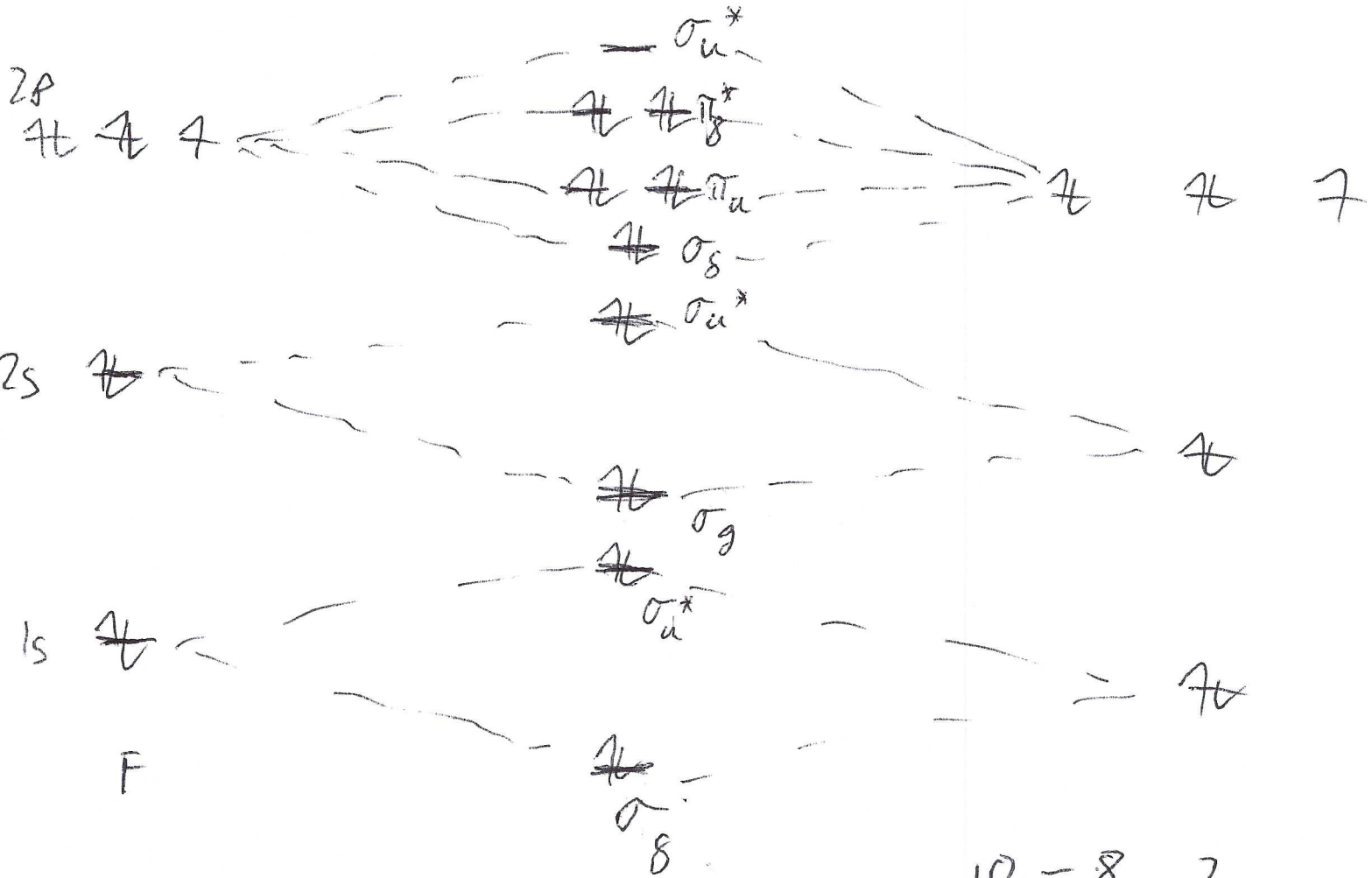
σ-orbitals have e^- density on bond axis,
π-orbitals do not

σ_g / π_g orbitals have inversion-symmetric wavefunction

(σ_u, π_u do not)

Example: F_2

F: $1s^2 2s^2 2p^5$



$$B = \frac{10-8}{2} = \frac{2}{2} = 1$$

bond order

$$B = \frac{(\text{number of bonding } e^-) - (\text{number of antibonding } e^-)}{2}$$

$B > 0$ stable molecule

$B \leq 0$ not stable