

## AST 300B – Spring 2019

### In-class/take-home Problems Due: Friday April 19th

35. The ground state electronic configuration of Carbon is  $1s^2 2s^2 2p^2$ . You will want to make a table for this problem.

- What are the possible scalar values of L and S?
- For each combination of L and S, what are the possible scalar values of J?
- What are the terms that correspond to each L, S, and J in your table? Hint: there are 10 terms in total.

In reality, not all these 10 terms exist because both valence electrons are in the *same orbital*, the possible combinations of L, S, and J have to obey Pauli's Exclusion Principle. Next class, I will show you how to figure out which of the terms you derived satisfy Pauli.

