

## LECTURE 26 MOLECULAR ORBITAL THEORY

### I. Valence Bond Theory vs. Molecular Orbital Theory

### II. Steps for molecular orbital construction

### III. Types of molecular orbitals

- A. Bonding
- B. Antibonding
- C. Nonbonding

### IV. Example: $\text{BH}_3$

- A. Indistinguishable / symmetry related atoms
- B. Linear combinations
- C. MO energy level diagram
  - 1. Highest occupied molecular orbital
  - 2. Lowest unoccupied molecular orbital
  - 3. Bonding MOs
  - 4. Nodes
  - 5. Antibonding MOs
  - 6. Nonbonding orbital