Georgia Tech College of Engineering
School of Aerospace Engineering

K_p for Systems

- So far only considered one "reaction" relationship
  - e.g., A+B↔C
- What if we had a system of such relations (more than one "reaction")
  - e.g., A+B↔C (r1)
    A+C↔D+E (r2)
- We could also write this as a single expression
  - i.e., 2A+B↔D+E (r3)=(r1)+(r2)
- Are K_p's for these reactions related?

$$K_{p_1} = \frac{p_C}{p_A p_B} \qquad K_{p_2} = \frac{p_D p_E}{p_A p_C} \qquad K_{p_1} K_{p_2} = \frac{\cancel{p_C} p_D p_E}{p_A^2 p_B \cancel{p_C}} = K_{p_3}$$

overall K_p = product of individual step K_p $\quad K_p = \prod_j K_{p_j}$