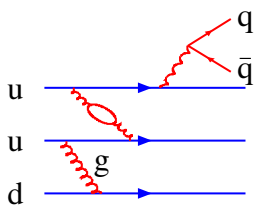
Origins of the Nucleon Sea: Perturbative



- Perturbative sea $g \to q\bar{q}$

- Pauli blocking in the nucleon:
  $g \to u\bar{u}$ more suppressed than $g \to d\bar{d}$

- Quantitative Calculation showed:

  $\Rightarrow$ Small effect (1%)
  Ross and Sachrajda Nucl. Phys. **B149** 497 (1979)

  $\Rightarrow$ $\bar{u} > \bar{d}$ Antisymmetry of quark wave fns.
  Steffens and Thomas, Phys. Rev. **D55** 900 (1997)

- Does not contribute to $\bar{d} - \bar{u} \neq 0$

- Lattice calculations PRL **72** (1994) 1790