

$$|\frac{3}{2}, +\frac{3}{2}\rangle = uuu$$

$$|\frac{3}{2}, +\frac{1}{2}\rangle = \frac{1}{\sqrt{3}} (uud + udu + duu)$$

$$|\frac{3}{2}, -\frac{1}{2}\rangle = \frac{1}{\sqrt{3}} (ddu + dud + udd)$$

$$|\frac{3}{2}, -\frac{3}{2}\rangle = ddd$$

Symmetric under interchange  
of any 2 quarks

$$|\frac{1}{2}, -\frac{1}{2}\rangle = -\frac{1}{\sqrt{6}} (2ddu - udd - dud)$$

$$|\frac{1}{2}, +\frac{1}{2}\rangle = \frac{1}{\sqrt{6}} (2uud - udu - duu)$$

Mixed symmetry  
Symmetric under exchange  
of 1<sup>st</sup> and 2<sup>nd</sup> quark

$$|\frac{1}{2}, -\frac{1}{2}\rangle = \frac{1}{\sqrt{2}} (udd - dud)$$

$$|\frac{1}{2}, +\frac{1}{2}\rangle = \frac{1}{\sqrt{2}} (udu - duu)$$

Mixed symmetry  
Anti-symmetric under exchange  
of 1<sup>st</sup> and 2<sup>nd</sup> quark