

### 3.3 Replace State Labels w/ operators

$$|n_1 n_2 \dots\rangle = \prod_k \frac{1}{(n_k!)^{\frac{1}{2}}} (a_k^\dagger)^{n_k} |0\rangle$$

Ex

$$|2/000\dots\rangle = \left[ \frac{1}{\sqrt{2!}} (a_1^\dagger)^2 \right] \left[ \frac{1}{\sqrt{1!}} a_2^\dagger \right] |0\rangle$$

went  $a_{pm}^\dagger$ , easy soln is just  $k \rightarrow p_m$ ,  
but we need to make sure not to  
violate any symmetry ideas.