

# Beamer Template

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## Expected number of particles in state $s$

$$\langle n_s \rangle = \sum_R n_s P(n_s)$$

$$\langle n_s \rangle = \frac{\sum_R n_s e^{-\beta E_R}}{\sum_R e^{-\beta E_R}}$$

## Example: Harmonic Oscillator

3 particles distributed among 4 states

	n=0	n=1	n=2	n=3	$E_R$
1	3	0	0	0	$\frac{3}{2}\hbar\omega$
2	0	3	0	0	$\frac{9}{2}\hbar\omega$
3	0	0	3	0	$\frac{15}{2}\hbar\omega$
4	0	0	0	3	$\frac{21}{2}\hbar\omega$
5	2	1	0	0	$\frac{5}{2}\hbar\omega$
6	2	0	1	0	$\frac{7}{2}\hbar\omega$
7	2	0	0	1	$\frac{9}{2}\hbar\omega$
8	0	2	1	0	$\frac{11}{2}\hbar\omega$
9	0	2	0	1	$\frac{13}{2}\hbar\omega$
10	1	2	0	0	$\frac{7}{2}\hbar\omega$