

# Quantum Optics Lab Review

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# Lab 1

## Entanglement and Bell's Inequalities

# Entanglement

$$|\Psi_{12}\rangle \neq |\Psi_1\rangle \otimes |\Psi_2\rangle$$

- Wave-functions are non-separable
- Measurement of state of one particle alters the state of the other particle
- Entanglement proposed in EPR paper (1935)
  - Believed this couldn't happen
- Bell's inequalities show occurrence of entanglement (proposed by J. S. Bell, 1964)