

## Quantum Physics

# Quantum Optics with Quantum Gases

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Quantum optics with quantum gases represents a new field, where the quantum nature of both light and ultracold matter plays equally important role. Only very recently this ultimate quantum limit of light-matter interaction became feasible experimentally. In traditional quantum optics, the cold atoms are considered classically, whereas, in quantum atom optics, the light is used as an essentially classical axillary tool. On the one hand, the quantization of optical trapping potentials can significantly modify many-body dynamics of atoms, which is well-known only for classical potentials. On the other hand, atomic fluctuations can modify the properties of the scattered light.

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