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## Rydberg atom interactions at the interface of an optical nanofiber

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Rydberg atoms are considered as one of the most promising candidates for quantum technologies. We have realized Rydberg atom excitation using light guided by an optical nanofiber (ONF). The large evanescent field resulting from the strong confinement of light in the ONF serves as a good platform for atom-light interactions. Our experiment consists of an ONF overlapped with a cloud of Rubidium-87 atoms cooled and confined by a magneto-optical trap (MOT). The atoms from the MOT are excited to Rydberg state via a two photon process, with one photon from the cooling beams and the other guided through the ONF. Atoms excited to the Rydberg state are lost from the MOT, leading to a reduction in the fluorescence measured, which we use as an indirect measurement of the rate of excitation. We could utilize our system for further studies on surface-atom interactions and extend our system for trapping atoms.

### Category

Other

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