Ultracold strontium atoms for Rydberg physics

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Ultracold alkali-earth atoms find many applications in such as optical frequency standards, quantum metrology, and Rydberg physics mainly by taking advantages of narrowband intercombination transitions. Here we will present an experimental setup for producing ultracold strontium atoms based on both a broadband and a narrowband laser-cooling technique [1]. A high-resolution depletion spectroscopy on strontium triplet Rydberg series [2] will be discussed, as well as efforts towards realizing Rydberg dressing in strontium gases.

References

[1] See I. Nosske *et al.*, Phys. Rev. A. **96**, 053415 (2017); F. Hu *et al.*, arXiv:1812.01258 [physics.atom-ph].

[2] L. Couturier, Phys. Rev. A **99**, 022503 (2019).