# 1S-3S CW spectroscopy of Deuterium atoms

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In this talk, I will begin by briefly presenting some of the key motivations for the spectroscopic study of hydrogen-like atoms, which serve as ideal tools for testing and challenging one of the most precise theories in physics: Quantum Electrodynamics (QED) [1]. I will then focus on the main experiment conducted in our Quantum tests with Hydrogen-like atoms group: the 1S-3S hydrogen spectroscopy experiment, performed at LKB (Paris) [2]. In particular, I will discuss the 1S-3S spectroscopy campaign on deuterium atoms that we conducted during the winter of 2020 using our home-built continuous-wave (CW) 205 nm laser. After addressing key systematic effects—including a newly identified one affecting our beamline—I will present the latest analysis results.

## References

[1] J-P. Karr and D. Marchand, *Progress on the proton-radius puzzle*, *Nature* **575, 61-62**, (2019).

[2] H. Fleurbaey, et al, *New measurement of the 1S-3S transition frequency of hydrogen: contribution to the proton charge radius puzzle PRL* **120**, 183001 (2018).