PROGRESS IN OPTICALLY-DETECTED SPIN-RESONANCE ON HELIUM DROPLETS

MARKUS KOCH, GERALD AUBÖCK, JOHANN NAGL, CARLO CALLEGARI, and WOLFGANG E. ERNST, *Institute of Experimental Physics, TU Graz, Petersgasse 16, 8010 Graz, Austria/EU*.

We have recently demonstrated the possibility of optically detecting the spin state of alkali metal atoms and molecules formed on helium nanodroplets and immersed in a magnetic field.[ab] This has already allowed us to show that the electronic spins of atoms do not relax within the timescale of the experiment ($\sim 10^{-3}$ s) and those of molecules do. With this prerequisites fulfilled, we now set to demonstrate that electron spins on a He droplet can be manipulated. We have already achieved optical pumping, which we intend to present at the meeting, and we strive to soon reach optically-detected electron-spin resonance.

[a] J. Nagl, G. Auböck, C. Callegari and W. E. Ernst, *Phys. Rev. Lett.* **98,** 075301 (2007).
[b] G. Auböck, J. Nagl, C. Callegari and W. E. Ernst, *J. Phys. Chem. A* **111,** 7404 (2007).