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Extension of opto-electric Sisyphus cooling to diatomic and polyatomic radicals MANUEL KOLLER, ISABEL M. RABEY, MARTIN ZEPPENFELD, GERHARD REMPE, Max-Planck-Institute of Quantum Optics, QUANTUM DYNAMICS DIVISION TEAM — Opto-electric Sisyphus cooling is a powerful technique which allows direct cooling of polyatomic molecules to the ultracold regime [1,2]. Taking advantage of the strong interaction between a molecule's dipole moment and an external field allows cooling over several orders of magnitude in temperature by cycling only a few dozen photons. In this talk we demonstrate the possibility to extend this cooling scheme to a broad range of molecular radicals. This includes diatomic radicals with Lambda doubling in the ground state and linear molecules in an excited vibrational bending mode. We will present details of the cooling scheme for individual molecules such as CH, possible with only three lasers. [1] Zeppenfeld et al., Nature 91, 570–573 (2012) [2] Prehn et al., PRL 116, 063005 (2016)

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