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Electrostatic trapping of molecules from the cryofuge in a microstructured trap ISABEL RABEY, MANUEL KOLLER, THOMAS GANTNER, FLORIAN JUNG, MARTIN ZEPPENFELD, GERHARD REMPE, Max Planck Institute for Quantum Optics, Hans Kopfermann Str. 1, 85748 Garching, Germany — Dense samples of cold polar molecules provide fascinating research possibilities in physics and chemistry. However, densities of cold and slow molecules achieved in past experiments have been insufficient for many applications. In our setup, we solve this problem by combining buffer gas cooling with centrifuge deceleration to create a bright, slow source of molecules, with energies below 1K [1]. The addition of a microstructured electrostatic trap [2] to the end of the *cryofuge* source allows molecules to be trapped and stored for several seconds. Trapped molecules may also be cooled to ultracold temperatures using opto-electrical Sisyphus cooling [3]. The techniques presented here are entirely general and can be applied to a diverse range of molecular species — including laser-coolable molecules. This allows us to investigate a wide variety of topics from cold and ultracold collisions to tests of fundamental physics.
[1] X. Wu *et al.*, Science **358**, 645 (2017)
[2] B. G. U. Englert *et al.*, PRL **107**, 263003 (2011)
[3] A. Prehn *et al.*, PRL **116**, 063005 (2016)

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