TRAVELLING-WAVE DECELERATION OF HEAVY DIATOMIC MOLECULES

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We have set up up a travelling-wave Stark-decelerator optimised for the deceleration and trapping of heavy diatomic molecules. This decelerator is an important first step in the optimal preparation of heavy diatomic molecules for sensitive studies of fundamental symmetries. The decelerator uses ring-shaped electrodes to create a moving trapping potential, that can be brought to a standstill in the laboratory frame by electronic control. With such a device, a wide range of molecules in the weak-field seeking part of excited rotational states can be decelerated and trapped. We demonstrate the working principle of our method using SrF molecules, which are well suited to probe for parity violation.