

Abstract Submitted
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Experimental demonstration of electrostatic surface guiding for cold polar molecules¹ YONG XIA, YALING YIN, JIANPING YIN, Key Laboratory of Optical and Magnetic Resonance Spectroscopy, Department of Physics, East China Normal University — We demonstrate an electrostatic surface guiding for cold polar molecules over a long distance of 44.5 cm on a substrate by using a hollow electrostatic field, which is generated by two parallel charged wires and a grounded metal-plate. We measure the transverse spatial distribution of the guided supersonic D₂O (including CH₃Br) molecular beam and its longitudinal velocity one, and study the dependence of the relative guiding efficiency and the transverse temperature of the guided molecular beam on the guiding voltage, also perform Mote-Carlo simulations and theoretical studies for the molecular guiding process, and our guiding scheme has some potential applications in molecule optics, such as molecular-beam splitter, integrated molecular optics, etc.

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