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**Observation of a quasi-one-dimensional Stern-Gerlach effect**<sup>1</sup> KEVIN MELIN, PAVEL NAGORNYKH, YU LU, LOGAN HILLBERRY, YI XU, MARK RAIZEN, The University of Texas at Austin — We demonstrate a realization of a quasi-one-dimensional Stern-Gerlach effect on a supersonic beam of lithium-7 atoms. In the original work, performed by Otto Stern and Walter Gerlach in 1922, a collimated beam of silver atoms was split into two distinct lines after passing through a permanent, spatially varying magnetic field. In addition to the splitting in one dimension, divergences in the atomic beam were expected in all dimensions due to the field configuration employed. In our work, we show that a combination of a pulsed magnetic field gradient plus a strong bias field can produce a nearly divergence-free quasi-one-dimensional force. This technique has applications towards new cooling methods and earth-based microgravity experiments.

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