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Molecular beam sorting by α/m: from fullerenes to carbon nanotubes HENDRIK ULBRICHT, MARTIN BERNINGER, SARAYUT DEACHAPUNYA, ANDRE STEFANOV, MARKUS ARNDT, Faculty of Physics, University of Vienna, Boltzmanngasse 5, 1090 Vienna, Austria — We show that a matter-wave interferometer can be used to sort gas phase molecules according to their polarizability-to-mass ratio α/m. We present a proof-of-principle experiment for the separation of C_{60} and C_{70}. We propose to exploit the high molecular throughput and high spatial resolution of our setup for the enrichment of different biomolecular conformers or mixtures of single-walled carbon nanotubes with strongly varying α/m-ratios inside a grating-based Stark deflectometer.

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