“Zeeman deceleration of nitrogen atoms in the metastable $^2D_{5/2}$ state”

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Zeeman deceleration is an experimental technique in which strong inhomogeneous magnetic fields inside an array of solenoid coils are used to manipulate the velocity of a supersonic beam of paramagnetic atoms or molecules [1,2].

We present experimental results that demonstrate, for the first time, the Zeeman deceleration of nitrogen atoms in the metastable $^2D_{5/2}$ state. Using an electron impact source and a short, 12-stage Zeeman decelerator, we achieve deceleration from 460 m/s to 410 m/s.