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Dynamics of photoelectrons in a magnetic field¹ CHRISTIAN BRACHER, Bryn Mawr College, TOBIAS KRAMER, Harvard University, JOHN B. DELOS, College of William & Mary — Near-threshold photodetachment from negative atomic ions provides a virtually pointlike source of electrons, and is ideally suited to study electron dynamics in externally applied electric and magnetic fields. These fields govern the motion of the emitted electron wave, and lead to characteristic modulations both in the total photocurrent and in the spatial electron distribution. These changes have been predicted and observed in an electric field environment (photodetachment microscopy). Here, we examine the effects of a purely magnetic field on the photodetachment cross sections. Theoretical predictions for the electron distribution reveal a surprising wealth of structure that is currently only partly understood. We present numerical and analytical results, and give a semiclassical interpretation of the observed features where possible.

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