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Experimental reconstruction of the Berry curvature in a topological Bloch band CHRISTOF WEITENBERG, NICK FLAESCHNER, BENNO REM, MATTHIAS TARNOWSKI, DOMINIK VOGEL, DIRK-SOEREN LUEHMANN, KLAUS SENGSTOCK, Institute for Laser Physics, University of Hamburg, Luruper Chaussee 149, 22761 Hamburg, Germany — Topological properties lie at the heart of many fascinating phenomena in solid state systems such as quantum Hall systems or Chern insulators. The topology can be captured by the distribution of Berry curvature, which describes the geometry of the eigenstates across the Brillouin zone. Employing fermionic ultracold atoms in a hexagonal optical lattice, we engineer the Berry curvature of the Bloch bands using resonant driving and measure it with full momentum resolution. Our results pave the way to explore intriguing phases of matter with interactions in topological band structures.

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