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Chiral magnetic effect and anomalous transport from real-time lattice simulations¹ SOEREN SCHLICHTING, SAYANTAN SHARMA, Brookhaven Natl Lab, MARK MACE, Stonybrook University, NIKLAS MUELLER, Univ. Heidelberg — We present a first-principle study of anomaly induced transport phenomena by performing real-time lattice simulations with dynamical fermions coupled simultaneously to non-Abelian $SU(N_c)$ and Abelian $U(1)$ gauge fields. We investigate the behavior of vector and axial currents during a sphaleron transition in the presence of an external magnetic field, and demonstrate how the interplay of the Chiral magnetic (CME) and Chiral separation effect (CSE) lead to the formation of a propagating wave. We also analyze the quark mass dependence of these phenomena and extract spectral information about the carriers of axial and vector charge.

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