Equilibrium currents in chiral systems with nonzero Chern number OLEG STARYKH, EUGENE MISHCHENKO, University of Utah — We describe a simple quantum-mechanical approach to calculating equilibrium particle current along the edge of a system with nontrivial band spectrum topology. The approach does not require any a priori knowledge of the band topology and, as a matter of fact, treats topological and nontopological contributions to the edge currents on the same footing. We illustrate its usefulness by demonstrating the existence of "topologically nontrivial" particle currents along the edges of three different physical systems: two-dimensional electron gas with spin-orbit coupling and Zeeman magnetic field, surface state of a topological insulator, and kagome antiferromagnet with Dzyaloshinskii-Moriya interaction.

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