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Negative transport times due to interband scattering MAXIM BREITKREIZ, Institute of Theoretical Physics, Technische Universität Dresden, 01062 Dresden, Germany, PHILIP BRYDON, Condensed Matter Theory Center, Department of Physics, University of Maryland, College Park, USA 20742, CARSTEN TIMM, Institute of Theoretical Physics, Technische Universität Dresden, 01062 Dresden, Germany — Negative transport times lead to unexpected transport behavior such as negative magnetoresistance, strongly enhanced Hall coefficient, and reduced resistivity. Within a semiclassical Boltzmann approach beyond the relaxation-time approximation, it is demonstrated that negative transport times generically arise due to anisotropic single-particle scattering between electronlike and holelike Fermi surfaces. This mechanism could be responsible for the anomalous transport properties of materials close to an excitonic instability. In particular we discuss the case of one circular hole pocket and two elliptical electron pockets, which is relevant for iron pnictides.

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