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Berry Phase Correction to Electron Density of States in Solids DI XIAO, JUNREN SHI, QIAN NIU, Department of Physics, The University of Texas at Austin — We show that Berry phase effect on the semiclassical dynamics of Bloch electrons leads to a modification of the density of states, which can be controlled, for instance, by an external magnetic field. In metals, the predicted effect leads to the break down of the Luttingers theorem on the Fermi sea volume. In insulators, it results in a novel magneto-resistance. The Berry phase correction to the density of states also has a non-trivial contribution to the orbital magnetization.

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