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Berry curvature contributions to the density fluctuation spectrum of Bloch electrons M. J. RAVE, W. C. KERR, Wake Forest University — Recent work has shown that the equations of motion (EOM) for semiclassical Bloch electrons must be modified in the presence of a non-zero Berry curvature [1]. These corrections to the EOM have implications for many physical quantities: effective mass, electron orbits in a magnetic field, de Haas-van Alphen oscillations, etc. In addition the Boltzmann transport equation is also modified with possible ramifications for calculations of transport phenomena. We investigate these issues for a gas of spinless Bloch electrons in an external electric field. We find modifications to the traditional dispersion relation for density fluctuations; in particular we find a shift in the plasma frequency and an anisotropic sound velocity. [1] M.-C. Chang and Q. Niu, Phys. Rev. B 53, 7010 (1996)

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