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Dynamics of an Electron in a Saddle Potential Subject to Crossed Electric and Magnetic Fields K. SABEEH, A. YAR, Quaid-i-Azam University, Islamabad, Pakistan, V. FESSATIDIS, Fordham University, Bronx, USA, N.J.M. HORING, Stevens Institute of Technology, Hoboken, USA, M.L. GLASSER, Clarkson University, Potsdam, USA — We analyze the role of an electric field in the scattering/tunneling of an incident plane electron wave through a quantum point contact in a magnetic field. In this, the point contact is modeled as a saddle potential. We employ the Bogoliubov transformation and guiding center coordinates following the techniques of H. A. Fertig and B. I. Halperin (Phys. Rev. B **36**, 7969 (1987)), but we expand the analysis to include the effects of the applied electric field here and examine the temporal development of the incident plane electron wave rather than that of a bath eigenfunction.

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