Two-solenoidal Aharonov-Bohm effect with quantized magnetic fluxes

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Abstract:
We consider the motion of a quantum particle confined in a plane under the influence of two infinitesimally thin magnetic solenoids perpendicular to the plane. Provided that two fluxes equal the quantum of magnetic flux, we give the generalized eigenfunctions of the corresponding Hamiltonian using various Mathieu functions. As a consequence, we give an explicit formula for the scattering amplitude using some special value of Mathieu functions.