

# Spin $\frac{1}{2}$ Particle with Anomalous Magnetic Moment in Presence of External Magnetic Field, Exact Solutions

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**Abstract.** We examine a generalize Dirac equation for spin  $\frac{1}{2}$  particle with anomalous magnetic moment in presence of the external uniform magnetic field. After separation of the variables, the problem is reduced to a 4-order ordinary differential equation, which is solved exactly with

the use of the factorization method. A generalized formula for Landau energy levels is found. Solutions are expressed in terms of confluent hypergeometric functions.

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