

Abstract Submitted  
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**A Simple Five-Dimensional Wave Equation for a Dirac Particle**

N. REDINGTON, M.A.K. LODHI, Texas Tech University — A first-order relativistic wave equation is constructed in five dimensions. Its solutions are eight-component spinors, which are interpreted as single-particle fermion wave functions in four-dimensional spacetime. Use of a “cylinder condition” (the removal of explicit dependence on the fifth coordinate) reduces each eight-component solution to a pair of degenerate four-component spinors obeying the Dirac equation. This five-dimensional method is used to obtain solutions for a free particle and for a particle moving in the Coulomb potential. It is shown that, under the cylinder condition, the results are the same as those from the Dirac equation.

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