Path Integral Treatment of a Dirac Particle in a Weak Gravitational Plane Wave

Sana Zabat and Lyazid Chetouani

Département de Physique, Faculté des Sciences Exactes, Université Mentouri, 25000 Constantine, Algeria

Reprint requests to L. C; E-mail: lyazidchetouani@gmail.com

Z. Naturforsch. **65a**, 431 – 444 (2010); received March 25, 2009 / revised August 20, 2009

The Green functions for Klein-Gordon and Dirac particles in a weak gravitational field are determined exactly by the path integral formalism. By using simple changes, it is shown that the classical trajectories play an important role in determining these Green functions.

Key words: Path Integral; Dirac Equation; Exact Solution. *PACS numbers:* 04.30.-w, 03.65.Ca, 03.65.Db, 03.65.Pm