

# Re: dirac equation in curved spacetime

---

*Source:* <http://sci.tech-archive.net/Archive/sci.physics.research/2007-09/msg00078.html>

---

- *From:* Oh No <[NotI@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:NotI@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Wed, 19 Sep 2007 10:27:59 +0000 (UTC)
- 

Thus spake vivishek <[vivishek.sudhir@xxxxxxxxxx](mailto:vivishek.sudhir@xxxxxxxxxx)>

Is there a single, well-accepted form of the dirac equation for a free particle in curved spacetime? If not, what are the various possibilities constructed so far?

Its form is determined by manifest covariance, but of course it may be treated either as a wave equation or an operator equation as usual. Here is a selection of papers.

arXiv:0706.4413

Title: Quantum wave equations in curved space-time from wave mechanics  
Authors: Mayeul Arminjon

arXiv:hep-th/0610207

Title: On bound states of Dirac particles in gravitational fields  
Authors: Nicolas Boulanger, Fabien Buisseret, Philippe Spindel

arXiv:gr-qc/0603099

Title: Electromagnetic and gravitational self-force on a relativistic particle from quantum fields in curved space  
Authors: Chad R. Galley, B. L. Hu, Shih-Yuin Lin

arXiv:hep-th/0411016

Title: Symmetries and supersymmetries of the Dirac operators in curved spacetimes  
Authors: I. I. Cotuaescu, M. Visinescu

arXiv:gr-qc/0409080 [ps, pdf, other]

Title:  $\bar{SL}(4, \mathbb{R})$  Embedding for a 3D World Spinor Equation  
Authors: Djordje Sijacki

arXiv:gr-qc/0209096

Title: Gravity, torsion, Dirac field and computer algebra using MAPLE and REDUCE

arXiv:gr-qc/0103056 [ps, pdf, other]

Re: dirac equation in curved spacetime

Title: Application of linear hyperbolic PDE to linear quantum fields in curved spacetimes: especially black holes, time machines and a new semi-local vacuum concept

Authors: Bernard S. Kay (York)

arXiv:gr-qc/0010065 [ps, pdf, other]

Title: The phase of a quantum mechanical particle in curved spacetime

Authors: P.M. Alsing, J.C. Evans, K.K. Nandi

arXiv:gr-qc/0008047 [ps, pdf, other]

Title: A new approach to electromagnetic wave tails on a curved spacetime

arXiv:gr-qc/9708041 [ps, pdf, other]

Title: Gravity from Dirac Eigenvalues

Authors: Giovanni Landi, Carlo Rovelli

arXiv:gr-qc/9612034 [ps, pdf, other]

Title: General Relativity in terms of Dirac Eigenvalues

Authors: Giovanni Landi, Carlo Rovelli

Regards

—

Charles Francis

moderator sci.physicsFOUNDATIONS.

substitute charles for NotI to email

.