





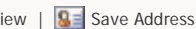


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From : Suvrat Raju <suvrat@physics.harvard.edu>  |  |  |  Tomu | 

Reply-To : suvrat@physics.harvard.edu

Sent : Wednesday, October 26, 2005 11:15 PM

To : M.Atiyah@ed.ac.uk, Michael.Atiyah@ed.ac.uk

Subject : functional differential equations (fwd)

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Dear Professor Atiyah,

I am a graduate student at Harvard. I have been working, with Prof. Shiraz Minwalla, on aspects of the AdS/CFT correspondence.

I heard your very interesting talk at the KITP, on whether the Universe has a history, via webcast.

As was brought up in the questions after the talk, relativity necessitates the replacement of ordinary differential equations with functional differential equations. As Prof. Gross mentioned, this is currently done in modern Physics by introducing fields.

However, a comprehensive analysis of the physical and philosophical implications of replacing ordinary differential equations with functional differential equations was first done more than 10 years ago and may be found in the book "Time: Towards a Consistent Theory. By C.K. Raju. Dordrecht, Netherlands: Kluwer (1994) (Fundamental theories of physics, 65)."

Prof. Raju considers functional differential equations of both the 'retarded' and the 'mixed' type. Moreover, in Chapter VI, he shows how it is possible to reconstruct the formal structure of quantum mechanics from this.

Moreover, last year, Prof. Raju also published the first ever solution to retarded functional differential equations in the concrete physical context of a two body electrodynamic system. These results may be found in "The electrodynamic 2-body problem and the origin of quantum mechanics", Found. Phys. 34 (6) June 2004, 937--62.

I have attached a pdf version of the paper to this email.

Thank you.


Regards,

Suvrat Raju

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