FAST BREAKING PAPERS - 2008

October 2008

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Eqab M. Rabei & Dumitru Baleanu talk with *ScienceWatch.com* and answer a few questions about this month's Fast Breaking Paper in the field of Mathematics.

Article Title: The Hamilton formalism with fractional derivatives
Authors: Rabei, EM;Nawafleh, KI;Hijjawi, RS;Muslih, SI;Baleanu, D
Journal: J MATH ANAL APPL
Volume: 327
Issue: 2
Page: 891-897
Year: MAR 15 2007
* Mutah Univ, Dept Phys, Al Karak, Jordan.
* Mutah Univ, Dept Phys, Al Karak, Jordan.
(addresses have been truncated)

SW: Why do you think your paper is highly cited?

The paper is highly cited because it describes a new method in the emerging field of fractional calculus. Also the field of the physical applications of fractional calculus is a hot subject.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

The method describes a new methodology to treat fractional dynamical systems.

SW: Would you summarize the significance of your paper in layman's terms?

This new methodology is quite useful in discussing fractional dynamics and its applications. Some possible applications are the quantization of nonconservative systems using fractional calculus and the fractional quantization of constrained systems.

Coauthor
Dumitru Baleanu

SW: How did you become involved in this research, and were there any problems along the way?

Eqab M. Rabei first became involved in this research by reading some old papers on variational principles involving fractional terms.

SW: Where do you see your research leading in the future?

The results obtained in the paper will provide a solid basis for understanding the fractional quantization method for discrete dynamical systems.

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Keywords: Hamilton formalism, fractional calculus, fractional dynamical systems, fractional quantization of constrained systems, fractional quantization method, discrete dynamical systems.

PDF

back to top

2008 : October 2008 - Fast Breaking Papers : Eqab M. Rabei & Dumitru Baleanu

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