MaSS
DST-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL & STATISTICAL SCIENCES

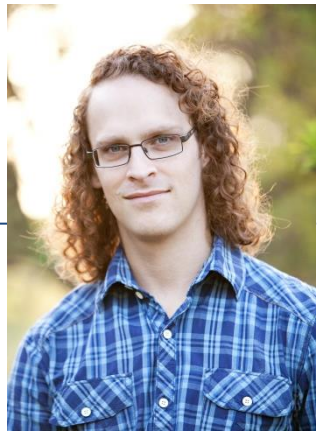
CoE-MaSS weekly seminar series

THE DST-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL AND STATISTICAL SCIENCES (CoE-MaSS) WOULD LIKE TO PRESENT A SEMINAR BY

Dr Byron Jacobs

(School of Computer Science and Applied Mathematics, Wits University)

"A new scheme for solving some subdiffusion fractional partial differential equations"



Friday, 4 March 2016
10h30-11h30

Broadcast live from:
Videoconferencing Facility, 1st Floor
Mathematical Sciences Building, Wits West Campus

How to connect to this seminar remotely:
You can connect remotely via Vidyo to this research seminar by clicking on this link:
http://wits-vc.tenet.ac.za/flex.html?roomdirect.html&key=y0SSOwFsvsidbzg4qFdWXvvQtyI
and downloading the Vidyo software before the seminar.
You must please join in the virtual venue (called *"CoE Seminar Room (Wits)"* on Vidyo) strictly between **10h00-10h15**. No latecomers will be added.

Important videoconferencing netiquette:
Once the seminar commences, please mute your own microphone so that there is no feedback from your side into the virtual room. During the Q&A slot you can then unmute your microphone if you have a question to ask the speaker.

Title:
A new scheme for solving some subdiffusion fractional partial differential equations.

Presenter:
Dr Byron Jacobs, School of Computer Science and Applied Mathematics, University of the Witwatersrand, Johannesburg, South Africa; byron.jacobs@wits.ac.za

Abstract:
Explicit numerical finite difference schemes for partial differential equations are well known to be easy to implement but they are particularly problematic for solving equations whose solutions admit shocks, blow-ups and discontinuities. Here we present an explicit numerical scheme for solving non linear advection-diffusion equations admitting shock solutions that is both easy to implement and stable. The numerical scheme is obtained by considering the continuum limit of a discrete time- and space-stochastic process for non-linear advection diffusion. The stochastic process is well posed and this guarantees the stability of the scheme. Several examples are provided to highlight the importance of the formulation of the stochastic process in obtaining a stable and accurate numerical scheme.