

NITheCS

National Institute for
Theoretical and
Computational Sciences

NITheCS Colloquium

Monday, 19 July 2021, 16h00

Prof Bruce Bassett (UCT), Prof Wolfram Decker (TU Kaiserslautern),
Prof Barry Green (AIMS), Prof Bernardo Rodrigues (UP)

“Panel Discussion: Computation as a tool for solving theoretical questions”

BIOGRAPHIES

Prof Bruce Bassett (UCT)

Bruce is head of Cosmology at the African Institute for Mathematical Sciences, Professor of Applied Mathematics at UCT and research astronomer at SAAO. Bruce did his PhD at SISSA in Italy, followed by a postdoctoral fellowship at Oxford University. He was then a senior lecturer and Reader at the University of Portsmouth before taking a sabbatical in Japan at the University of Kyoto, and which he returned to Cape Town in 2004. His research interests started in theoretical cosmology, moved into the search for dark energy which led him into statistical methods, optimisation and machine learning. His research in the last five years has focused on machine learning and artificial intelligence. He is the author of the popular science book "Introducing Relativity" which has been translated into Italian and Turkish.

Prof. Dr. Wolfram Decker (TU Kaiserslautern)

Fields of research: Algebraic geometry, computer algebra

Recent professional activities:

- Coordinator of the nationwide DFG Priority Programme SPP 1489 Algorithmic Methods in Algebra, Geometry and Number Theory (2010-2016)
- Deputy speaker of the DFG Collaborative Research Center TRR 195 Symbolic Tools and Their Application (since 2017)
- Co-speaker of the Mathematical Research Data Initiative MaRDI, a consortium of the National Research Data Infra Structure NFDI (since 2021)

Selected mathematical software:

- Head of the SINGULAR developers group (since 2009)
- Co-leader of the OSCAR developers group (since 2017)

Prof Barry Green (AIMS)

Barry Green holds a Professorship in Mathematics at Stellenbosch University and is the Director of the African Institute for Mathematical Sciences (AIMS) in South Africa.

He completed his PhD at the University of Cape Town in 1984 and lectured at Stellenbosch University before spending ten years as a research scientist at the University of Heidelberg in Germany, where he also completed the Habilitation. His field of interest is Algebra and Number Theory. In 1996 he returned to Stellenbosch University, where he was appointed Chairperson of the Mathematics Department in 2002 and Executive Head of the Department of Mathematical Sciences from 2006 to 2009. In 2007 he received the South African Mathematical Society's Award for Research Distinction and has been Editor of the mathematics journal *Quaestiones Mathematicae* from 2002 to 2015.

Green has been closely involved with the growth of AIMS since its founding in 2003 and was appointed the second Director of AIMS South Africa in April 2010. He was the Interim Director of AIMS-Cameroon from 2013 – July 2016, and Interim Director of AIMS-Rwanda from August 2016 to 2018, when those centres were established. He is passionate about promoting the growth of the mathematical sciences in the developing world, particularly in Africa, and is the current President of CIMPA, the International Centre for Pure and Applied Mathematics, a category 2 UNESCO organisation.

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Prof Bernardo Rodrigues (UP)

Prof Rodrigues studied at the Pedagogic University Enrique José Varona in La Habana, Cuba where he earned a Licenciatura in Mathematics and Education (equivalent to an MSc) and moved to the former University of Natal, in Pietermaritzburg, South Africa where he obtained an MSc in 2000 and a PhD in Mathematics in 2003, the latter under the supervision of Jamshid Moori (Natal) and co-supervision of Jennifer Key (Clemson University). He was appointed to the Mathematics Department of Natal University in 2004, where he became a Full Professor since August 2019, under the University of KwaZulu-Natal.

Since January 2020 he joined the University of Pretoria's department of Mathematics and Applied Mathematics.

In 2017, he was the recipient of a Fulbright Scholar Award and during the period 2016 - 2018 he participated in two Erasmus Mundus Plus Exchange Programmes. In the period 2017 -2019 he was a joint recipient of a London Mathematical Society MARM research partnership to undertake research in the construction of non-associative Axial Algebras related to the sporadic finite simple groups. Although his early work concerned the theory of finite groups, in particular the study of the extension problem, his current research interests concern with the interplay between Algebraic Coding Theory, Finite Groups, Modular Representation Theory of Finite Groups and Combinatorial Design Theory as well as Computational Group Theory, including both the concrete and the abstract aspects of these subjects. His recent papers involve modular representation of finite simple groups, as well as the application of this to the realization of finite simple groups as permutation groups of automorphisms of linear codes. He became a member of the editorial board of the journal Afrika Mathematica in 2013 and a Deputy-Editor in 2018.

He has held several visiting positions in several African countries, at universities in the United States, Australia, New Zealand and United Kingdom, most frequently at the University of Birmingham in the UK.

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