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UK-Africa Postgraduate Study Institute in Mathematical Sciences: Recordings

18 December 2020

Professor Philip K. Maini, *Modelling collective cell migration in neural crest*

22 – 24 February 2021

Infectious Tropical Disease and COVID-19 Modelling: Towards disease control policies supported by scientific evidence. Mathematics of Public Policy.

Julien Arino, *Assessing the risk of COVID-19 importation and the effect of quarantine*
Jasmina Panovska-Griffiths, *Modelling COVID-19 transmission and the impact of different interventions on the UK epidemic*
William Waites, *Coupling within-host and population dynamics of epidemics with stochastic graph rewriting*
Istvan Z. Kiss, *The timing of one-shot interventions for epidemic control*
Jasmina Panovska-Griffiths, *Statistical analysis to identify risks groups of COVID-19 and to explore whether COVID-19 symptoms vary by age*
Zindoga Mukandavire, *Introduction to modelling*
Jane White, *Incorporating behavioural change in models for infection dynamics*
Farai Nyabadza, *Models vs policies: Challenges and possible expositions*
Eduard Campillo-Funollet, *Parameter estimation of SIR models*
Istvan Kiss, *Exact and approximate epidemic models on networks*
Graeme Ackland, *Modelling and Data Challenges in a Pandemic*
John H. Njagarah, *Sensitivity analysis of parameters of an epidemic model*

15 - 17 March 2021

Mathematical Modelling of Biological Systems. Numerical analysis and High Performance Scientific Computing.

Stephanie Portet, Basic modelling concepts (Part I) and Basic modelling concepts (Part II)
Nikolaos Sfakianakis, Bridging the gap between SDEs and PDEs: Hybrid modelling with application in cancer tissue invasion
Prof. Alberto d'Onofrio, Behavioral Epidemiology of Infectious Diseases: its recent past and its future
Julien Arino, Simulating stochastic systems
Sandile Motsa, Block hybrid methods for solving systems of non-linear ODEs
Shekar Venkataraman, Galerkin methods for ODEs
Eduard Campillo-Funollet, Exhibiting open source numerical software packages
Fred Vermolen, The theory of ODEs (existence, uniqueness, phase plane analysis, stability): Part I & II
Fred Vermolen, Cellular automaton model with applications to wound healing

12-14 April 2021

Modelling, Analysis, Numerical Methods and Applications of PDEs and SPDEs

Philip K. Maini, Turing models and the link to patterning in developmental biology
Nikolaos Sfakianakis, The Mathematics of Crop Science: a brief overview of models and methods
Chandrasekhar Venkataraman, Numerical methods for surface PDEs: Part I
Prof. Leah Edelstein-Keshet, Models for cell migration: from complex to simple and back again
Chandrasekhar Venkataraman, Numerical methods for surface PDEs: Part II
Dumitru Trucu, Spatio-Temporal-Structural Dynamics in Cancer Invasion
Dumitru Trucu, Multiscale Moving Boundary Modelling of Cancer Invasion within Fibrous Environments
Sandile Motsa, Block hybrid methods for solving systems of PDEs
Philip K. Maini. PDE models in cancer (travelling waves)
Fred Vermolen, Finite element method for PDEs: Part I
Fred Vermolen, Finite element method for PDEs: Part II
Anotida Madzvamuse, Introduction to bulk-surface reaction-diffusion systems
Anotida Madzvamuse, Time-stepping schemes for RDEs

24 - 26 May 2021

Crime modelling in Sub-Saharan Africa and Financial Mathematics

Olivier M. Pamen, Introduction to stochastic optimal control: the stochastic maximum principle approach
Olivier M. Pamen, A Mean-Variance Asset Allocation with stochastic term structure and Hawkes jumps
Farai Mhlanga, Aspects of stochastic control and their applications in mathematical finance
CW (Kees) Oosterlee, Pricing and calibration with neural networks in finance
Raul Manasevich, Some crime modelling experiences in Santiago Chile
CW (Kees) Oosterlee, Monte Carlo simulation techniques in computational finance, supported by neural networks
Jane White, Building a model of crime dynamics
Jane White, Exploring a range of modelling approaches for criminal behaviour and criminal activity
Farai Nyabadza, A systems approach to modelling crime dynamics
Farai Nyabadza, Can we model the interplay between substance abuse and crime dynamics?
Fred Vermolen, Introductory statistics and the central limit theorem
Fred Vermolen, Statistical testing of hypotheses
Eduard Campillo-Funollet, Introduction to Bayesian methods for parameter identification
Max Jensen, Hamilton-Jacobi-Bellman equations and Applications to Finance
Rodwell Kufakunesu, On the energy quanto options

28 - 29 June 2021

Research Group Presentations