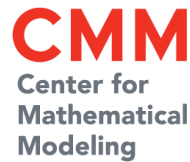


# 1<sup>st</sup> CMM-Bath Workshop on Applied & Interdisciplinary Mathematics

Center for Mathematical Modeling  
University of Chile – Santiago  
19 – 21 March 2019



UNIVERSITY OF  
**BATH**

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## PROGRAMME

### Tuesday 19 March

12:00 - 12:15 Welcome and workshop format description

Topic: **Non-Linear Analysis and its Applications**: Homogenization, Material sciences, Inverse problems, Imaging, Calculus of variations and optimal design problems, Numerical experiences.

12:30 - 13:20 Sergio Gutierrez, PUC, “Worst Case Optimal Design using Small Amplitude Homogenization”

13:30 - 14:20 Light Lunch

Topic: **Non-Linear Analysis and its Applications** (revisited)

14:30 - 15:20 Silvia Gazzola, University of Bath, “Fast Iterative Regularization Methods”

15:30 - 16:20 Jaime Ortega, CMM/UCHile, TBA

16:30 - 17:00 Coffee Break

Topic: **Non-Linear Analysis and its Applications** (revisited)

17:00 - 17:50 Axel Osses, CMM/UCHile, “A mathematical direct & inverse model for light-sheet microscopy”

18:00 - 18:30 Alejandro Maass – A prospective vision of the CMM

18:45 - 19:30 Cocktail

## Wednesday 20 March

09:15 - 09:20 Welcome

Topic: **Interdisciplinary Mathematics and Modelling**: PDEs, Multiscale modeling, Mathematical biology, Dynamical and stochastic systems, Wave propagation, Mathematical problems from natural sciences & engineering, Optimal design problems, Numerical experiences.

09:20 - 10:00 Paul Milewski, Bath, "The Complex Dynamics of Faraday Pilot Waves: A Hydrodynamic Quantum Analogue"

10:10 - 11:00 Daniel Hurtado, PUC, "Multiscale modeling of lung tissue biomechanics"

**11:10 - 11:40 Coffee Break**

Topic: **Interdisciplinary Mathematics and Modelling** (revisited)

11:40 - 12:30 Joaquín Fontbona, CMM/UCHile, "Synchronization of stochastic mean field networks of Hodgkin–Huxley neurons with noisy channels"

**12:40 - 14:20 Lunch**

Topic: **Interdisciplinary Mathematics and Modelling** (revisited)

14:30 - 15:20 Rajesh Mahadevan, UdeC, "An optimization problem related to the nematic equilibrium of liquid crystals"

15:30 - 16:20 Johannes Zimmer, University of Bath, "From fluctuations in particle systems to their scaling limits and applications"

**16:30 - 17:00 Coffee Break**

Topic: **Applied Mathematics and its Interactions**: Material sciences, Liquid crystals, Multiscale modelling with PDEs, Mathematical biology.

17:00 - 17:50 Apala Majumdar, Bath, "Pattern Formation in Confined Nematic Liquid Crystals"

18:00 - 18:50 Duván Henao, PUC, "Debonding of a gel from a rigid substrate"

19:00 - 19:50 Patricio Cumsille, UBB, "Parameter estimation and mathematical modeling for the quantitative description of drug resistance in gastrointestinal stromal tumor metastasis to the liver"

Thursday 21 March

09:15 - 09:20 Welcome

Topic: **Applied Mathematics and its Interactions:** Multiscale modelling with PDEs, Mathematical biology, Graph theory and its interaction with informatics, Inverse problems, Control theory.

09:20 - 10:00 Rodrigo Lecaros, UTFSM, “An inverse problem for Moore–Gibson–Thompson equation arising in high intensity ultrasound”

10:10 - 11:00 Iván Rapaport, CMM/UCHile, “The Congested Clique Model”

11:10 - 11:40 Coffee Break

11:40 - 12:30           - Paul Milewski and Bath’s guest team - Presentation of the Department of Mathematical Sciences  
                              - Workshop Conclusions  
(Both activities will hold in the CMM’s Meeting room)

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