

Abridged timetable of MPDEE'26

Venue: Sir Bob Burges Building (SBB)

Lecture Theatre 1 (LT1), Lecture Theatre 2 (LT2), rooms 1.01 and 1.04

Monday April 20th

9.00-10.00	Registration (1.01)
10.00-10.15	Opening address (LT1)
10.15-11.00	Plenary talk 1 (Cinzia Soresina) (LT1)
11.00-11.30	<i>Coffee break (1.01)</i>
11.30-12.50	Contributed talks – Session 1 (LT1)
12.50-14.10	<i>Lunch break</i>
14.10-14.45	Keynote talk 1 (Carlos Braumann) (LT1)
14.50-16.10	Contributed talks – Session 2 (LT1)
16.10-16.40	<i>Coffee break (1.01)</i>
16.40-18.00	Contributed talks – Sessions 3,4 (LT1, 1.01)

Tuesday April 21st

9.30-10.15	Plenary talk 2 (Alan Hastings) (LT1)
10.15-11.00	Plenary talk 3 (Bernd Blasius) (LT1)
11.00-11.30	<i>Coffee break (1.01)</i>
11.30-12.50	Contributed talks – Sessions 5,6 (LT1, 1.01)
12.50-14.10	<i>Lunch break</i>
14.10-14.45	Keynote talk 2 (Mary Lou Zeeman) (LT1)
14.45-15.20	Keynote talk 3 (Valerio Lucarini) (LT1)
15.20-15.50	<i>Coffee break (1.01)</i>
15.50-17.10	Contributed talks – Session 7 (LT1)
17.30-19.30	Reception and poster session (1.01)

Wednesday April 22nd

9.30-10.15	Plenary talk 4 (Natalia Petrovskaya) (LT1)
10.15-11.00	Plenary talk 5 (Vasilis Dakos) (LT1)
11.00-11.30	<i>Coffee break (1.01)</i>
11.30-12.10	Contributed talks – Sessions 8,9 (LT1, 1.01)
12.10-13.20	<i>Lunch break</i>
13.20-13.55	Keynote talk 4 (Nikola Popovic) (LT1)
13.55-16.00	Minisymposium 1 (LT1)
16.00-16.30	<i>Coffee break (1.01)</i>
16.30-17.30	Honorary Lecture (Robert Costanza) (LT1)
17.30-18.30	Reception (1.01)

Thursday April 23rd

9.30-10.15	Plenary talk 6 (Sebastian Diehl) (LT1)
10.15-11.00	Plenary talk 7 (Arne Traulsen) (LT1)
11.00-11.30	<i>Coffee break (1.04)</i>
11.30-12.50	Contributed talks – Sessions 10,11 (LT1, LT2)
12.50-14.10	<i>Lunch break</i>
14.10-14.45	Keynote talk 5 (Jean-Christophe Poggiale) (LT1)
14.45-16.00	Minisymposium 2 (Part A) (LT1)
16.00-16.30	<i>Coffee break (1.04)</i>
16.30-17.45	Minisymposium 2 (Part B) (LT1)

Friday April 24th

9.30-10.15	Plenary talk 8 (Henrik Jensen) (LT1)
10.15-11.00	Plenary talk 9 (Inna Senina) (LT1)
11.00-11.30	<i>Coffee break (1.04)</i>
11.30-12.05	Keynote talk 6 (Christina Cobbold) (LT1)
12.05-13.15	<i>Lunch break</i>
13.15-14.35	Contributed talks – Sessions 12,13 (LT1, LT2)
14.40-15.00	Closing address and the end of the conference (LT1)

Detailed Conference Program

Monday April 20th

Venue: SBB 1.01

9.00-10.00 **Registration**

10.00-11.00 **Introduction and Plenary talk 1**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

10.00-10.15 **Introduction and opening address**

10.15-11.00 **Plenary talk 1. Cinzia Soresina** (University of Trento, Italy). From fast-reaction to pattern formation: a cross-diffusion perspective in population dynamics.

11.00-11.30 Coffee break: Sir Bob Burgess Building, room 1.01

11.30-12.50 Contributed Talks: Session 1

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

11.30-11.50 **Daniel Bearup** (University of Leicester, UK). Effects of higher order competition of the robustness of communities with cyclic competition to disturbance

11.50-12.10. **Omar Mazen Alqubori** (University of Jeddah, Saudi Arabia). Using mathematical modelling to highlight challenges in understanding trap counts obtained by a baited trap.

12.10-12.30 **Johannes Apelt** (University of Greifswald, Germany). Modelling cleaning interactions: deriving multispecies interaction terms via time scale separation.

12.30-12.50 **Andy Schofield** (University of Leicester, UK) Modelling metapopulation persistence in fragmented habitats under climate change.

12.50-14.10 Lunch break

14.10-16.10 Keynote talk1. Contributed Talks: Session 2

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

14.10-14.45 **Keynote talk 1. Carlos Braumann** (Universidade de Evora, Portugal). Harvesting in random environments: consequences of parameter estimation errors.

14.50-16.10 Contributed Talks: Session 2

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

14.50-15.10. **Andrew Morozov** (University of Leicester, UK). Spatiotemporal patterns of social protests in a reaction-diffusion model.

15.10-15.30. **Indrajyoti Gaine** (Indian Institute of Technology Kanpur, India). Analytical detection of bounds for spatio-temporal patterns: structural sensitivity.

15.30-15.50. **Vikas Kumar** (University of Delhi, India). Pattern formation and delay-induced instability in a Leslie-Gower type prey-predator system with Smith growth function.

15.50-16.10 **Oliver Ward** (Biomathematics and Statistics Scotland, UK). Modelling freshwater phytoplankton communities with variable stoichiometry under anthropogenic nutrient imbalances.

16.10-16.40 Coffee break: Sir Bob Burgess Building, room 1.01

16.40-18.00 Contributed Talks: Session 3 (Cancer modelling)

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

16.40-17.00 **Fatimah Alatawi** (University of Exeter, UK). Adaptive proportional-integral control for the cancer immunotherapy treatment.

17.00-17.20 **Mark Davies** (Cardiff University, UK). Early population dynamics predict success of adaptive therapy in cancer.

17.20-17.40 **Mahmoud Ibrahim** (University of Szeged, Hungary). Global dynamics of a tumor growth model with three mechanisms.

17.40-18.00 **Marom Yosef** (Ariel University, Israel). Mathematical modelling of MMC chemotherapy for non-invasive bladder cancer treatment

16.40-18.00 Contributed Talks: Session 4

Venue: Sir Bob Burgess Building, room 1.01

16.40-17.00 **Massimo Cavallaro** (University of Leicester, UK). An explainable AI framework for global sensitivity and key parameter identification: application to BVD infection dynamics.

17.00-17.20 **Denis Patterson** (Durham University, UK). Reproduction-survival tradeoffs in age-structured malaria models with immune feedback.

17.20-17.40 **Eunha Shim** (Soongsil University, Republic of Korea). Cost-effectiveness of female-only and gender-neutral HPV vaccination strategies in Japan.

17.40-18.00 **Maciej Tadej** (University of Wroc-law, Poland). Extinction, persistence and pattern formation in non-linear models with non-local dispersal on flat landscapes.

Time for rest and relaxation

Tuesday April 21st

9.30-11.00 **Plenary talks 3 and 4**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

9.30-10.15 **Plenary talk 2. Alan Hastings** (University of California, Davis, USA). An Inverse approach for understanding ecological coexistence.

10.15-11.00 **Plenary talk 3. Bernd Blasius** (University of Oldenburg, Germany) Sampling the unlikely: a statistical physics perspective on the complexity–stability paradox.

11.-00-11.30 Coffee break: Sir Bob Burgess Building, room 1.01

11.30-12.50 Contributed Talks: Session 5

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

11.30-11.50 **Maksude Keles Denk** (Yildiz Technical University, Turkey). Global dynamics of a discrete carbon emission-absorption model.

11.50-12.10. **Edvin Löthgren** (University of Potsdam, Germany). Dynamic nutrient competition (de-) stabilizes photosymbiosis.

12.10-12.30. **Jules Treto** (Theoretical and Experimental Ecology Station (SETE), CNRS, France). A new framework to explore spatial and scale dependency of biodiversity and ecosystems.

12.30-12.50. **Sarah Vollert** (Umeå University, Sweden). Modelling population dynamics for conservation decisions with limited data – should we avoid equilibrium theory?

11.30-12.50 Contributed Talks: Session 6

Venue: Sir Bob Burgess Building, room 1.01

11.30-11.50 **Arun Kumar** (Indian Institute of Technology Mandi, India). Autonomous and nonautonomous dynamics of an SIRS model: an application to seasonal influenza in the Congo.

11.50-12.10 **Alexandre Perrin** (Center for Applied Mathematics - Ecole Polytechnique, France). Deciphering the replication-division coordination in *E. coli*: a unified mathematical framework for systematic model comparison.

12.10-12.30 **Congjie Shi** (University of Szeged, Hungary) Individual infection probability derivation and network risk visualization.

12.30-12.50 **Bhargav Kumar Kakumani** (Birla Institute of Technology & Science - Pilani, India) Optimal control for a nonlinear McKendrick-von Foerster equation with generic cost functional.

12.50-14.10 Lunch break

14.10-15.20 **Keynote talks 2 and 3**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

14.10-14.45. **Keynote talk 2. Mary Lou Zeeman** (Bowdoin College, USA). A new framework for studying transient reactivity in two-dimensional systems

14.45-15.20. **Keynote talk 3. Valerio Lucarini** (University of Leicester, UK). Linear response and optimal fingerprinting for nonautonomous systems.

15.20-15.50 Coffee break: Sir Bob Burgess Building, room 1.01

15.50-17.10 Contributed Talks: Session 7.

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

15.50-16.10. **Manuel Santos Gutierrez** (University of Leicester, UK). Improving transient and equilibrium climate response computations: nonlinear fluctuation-dissipation relations

16.10-16.30. **Larissa Serdukova** (University of Leicester, UK). Influence of extreme events modelled by Lévy flight on Atlantic meridional overturning circulation stability.

16.30-16.50. **Yuzhu Shi** (University of Leicester, UK). Geometric early warning indicator from stochastic separatrix structure in a random two-state ecosystem model.

16.50-17:10. **Mauro Mobilia** (University of Leeds, UK). Fixation and extinction in time-fluctuating spatially structured metapopulations.

17.30-19.30 **Poster session and wine reception:** Sir Bob Burgess Building, room 1.01

Time for rest and relaxation

Wednesday April 22nd

9.30-11.00 **Plenary talks 5 and 6**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

9.30-10.15 **Plenary talk 4. Natalia Petrovskaya** (University of Birmingham, UK). Spatio-temporal dynamics of slug populations in arable fields.

10.15-11.00 **Plenary talk 5. Vasilis Dakos** (University of Montpellier, CNRS, IRD, Montpellier, France). Detecting and anticipating abrupt shifts in productivity dynamics of global fisheries

11.-00-11.30 Coffee break: Sir Bob Burgess Building, room 1.01

11.30-12.10 Contributed Talks: Session 7

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

11.30-11.50. **Krishna Kumar** (University of Birmingham, UK). A mathematical model for spatial spread of the olive quick decline syndrome.

11.50-12.10. **Jonathan Sutton** (King's College London) Altered disturbance regimes and biological invasions synergistically drive native species loss.

11.30-12.10 Contributed Talks: Session 8

Venue: Sir Bob Burgess Building, room 1.01

11.30-11.50. **Raoul Scribbans** (University of Bath, UK). Phenologically explicit robustness metric reveals increased vulnerabilities in temporal plant-pollinator networks.

11.50-12.10. **Mukhtar Muhammed** (Stellenbosch University, South Africa). Adaptive foraging shapes eco-evolutionary dynamics of plant-pollinator networks

12.10-13.20 Lunch break

13.20-13.55 **Keynote talk 4.**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

13.20-13.55. **Keynote talk 4. Nikola Popovic** (University of Edinburgh, UK) Critical Transitions and Tipping in a Multiple-Scale Demographic Model

13.55-16.00 **Minisymposium 1.** Ecosystem Dynamics in a Changing Environment

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

13.55-14.20. **Swarnendu Banerjee** (University of Amsterdam, the Netherlands). Energetic cost of infection is key to food-web resilience to parasitic invasion

14.20-14.45. **Gabriele Grifo** (Istituto Nazionale di Alta Matematica Francesco Severi, Rome, Italy) Multiscale mechanisms driving ecosystem stability and transitions.

14.45-15.10. **Frithjof Lutscher** (University of Ottawa, Canada). How phenological (a-)synchrony can alter consumer-resource dynamics.

15.10-15.35. **David Pinto-Ramos** (Helmholtz-Zentrum Dresden-Rossendorf, Germany). How spatial patterns can lead to less resilient ecosystems.

15.35-16.00 **Rebecca Tyson** (University of British Columbia Okanagan, Canada). Birds and burns.

16.00-16.30 Coffee break: Sir Bob Burgess Building, room 1.01

16.30-17.30 **Honorary Lecture**

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

16.30-17.30. **Honorary Lecture. Robert Costanza** (University College London, UK). Measuring and modelling what matters: creating a wellbeing economy in a time of global change.

17.30-18.30 **Reception:** Sir Bob Burgess Building, room 1.01

Time for rest and relaxation

Thursday April 23rd

9.30-11.00 Plenary talks 7 and 8

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

9.30-10.15 **Plenary talk 6. Sebastian Diehl** (Umea University, Sweden) Physical drivers of algal dynamics in lakes: theory, data and the model 'Lake2D'.

10.15-11.00 **Plenary talk 7. Arne Traulsen** (Max-Planck-Institute for Evolutionary Biology, Plön, Germany). Rethinking the connection between theoretical ecology and evolutionary game theory.

11.00-11.30 Coffee break: Sir Bob Burgess Building, room 1.06

11.30-12.50 Contributed Talks: Session 10

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

11.30-11.50. **Michael Bonsall** (University of Oxford). Life history variation and the evolutionary maintenance of parental care strategies.

11.50-12.10. **Mateo Deangeli Bravo** (Ecole Polytechnique, CMAP, France). Modelling horizontal gene transfer: scaling-limit and ancestral lineages

12.10-12.30 **Elliot Butterworth** (University of Bath, UK). Complexity as the by-product of sub-optimal evolutionary histories in multi-optima fitness landscapes.

12.30-12.50. **Max Dew** (University of Liverpool, UK). Death rate drives the suppression of natural selection in structured populations.

11.30-12.50 Contributed Talks: Session 11

Venue: Sir Bob Burgess Building, Lecture Theatre 2.

11.30-11.50. **Rebecca Tyson** (University of British Columbia Okanagan, Canada). Tipping to climate action: qualitative insights from a social-climate model with a committed minority.

11.50-12.10. **Dweepabiswa Bagchi** (University of Oldenburg, Germany). Importance of the phase of oscillations for the coexistence of species in complex population networks.

12.10-12.30. **Jorge Duarte** (Lisbon School of Engineering, Lisbon, Portugal). Scaling law in saddle-node bifurcations for one-dimensional maps: a complex variable approach

12.30-12.50. **Aran Dabbaghchi** (University of Exeter, UK). On a co-dimension two Hopf bifurcation arising from FitzHugh-Nagumo equations.

12.50-14.10 Lunch break

14.10-14.45 Keynote talk 5.

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

14.10-14.45. **Keynote talk 5. Jean-Christophe Poggiale** (MIO, Aix-Marseille University, France). Managing risks and trade-offs in multispecies fisheries: the role of trophic control and price asymmetry

14.45-16.00 **Minisymposium 2 (Part A)**. Ecological networks in a changing world.

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

14.45-15.10. **Korinna Allhoff** (University of Hohenheim, Stuttgart, Germany). Eco-evolutionary dynamics in competitive systems: Rescue or murder?

15.10-15.35. **Ilaria Cunico** (National Institute of Oceanography and Applied Geophysics, Trieste, Italy). Beyond stability: the chaotic side of the marine trophic network.

15.35-16.00. **Brennen Fagan** (University of York, UK). Perturbing habitats: the long and short of it.

16.00-16.30 Coffee break: Sir Bob Burgess Building, room 1.06

16.30-17.45 **Minisymposium 2 (Part B)**. Ecological networks in a changing world.

Venue: Sir Bob Burgess building, Lecture Theatre 1.

16.30-16.55. **Christian Guill** (University of Potsdam, Germany). Indirect evolutionary rescue and murder in complex food webs.

16.55-17.20. **Felix Jäger** (University of Hohenheim, Germany). Between friends and foes - Evolutionary diversification in tripartite ecological networks.

17.20-17.45. **Axel Rossberg** (Queen Mary University of London, UK). Evidence for a human-induced phase transition in structure and dynamics of ecological networks around the world.

Time for rest and relaxation

Friday April 24th

9.30-11.00 **Plenary talks 9 and 10**

Venue: Sir Bob Burgess building, Lecture Theatre 1.

9.30-10.15 **Plenary talk 8. Henrik Jensen** (Imperial College London, UK). Emergence in Co-Evolutionary Dynamics: The Tangled Nature Model of ecosystemic adaptation, agency and selection, and the effect of global warming.

10.15-11.00. **Plenary talk 9. Inna Senina** (Oceanic Fisheries Programme, Noumea, New Caledonia). Mechanistic modelling of global tuna dynamics: understanding the impacts of climate change.

11.00-11.30 Coffee break: Sir Bob Burgess Building, room 1.06

11.30-12.05 **Keynote talk 6.**

Venue: Sir Bob Burgess building, Lecture Theatre 1.

11.30-12.05. **Keynote talk 6. Christina Cobbold** (University of Glasgow, UK). Phenotypic plasticity as a route to population shifts via tipping points.

12.05-13.15 Lunch break

13.15-14.35 Contributed Talks: Session 12

Venue: Sir Bob Burgess Building, Lecture Theatre 1.

13.15-13.35. **Fabian Freund** (University of Leicester, UK). Ancestral tree height estimation and applications to whole genome data.

13.35-13.55. **Najwa Aljohani** (University of Leicester, UK). Modelling bacteria-phage interactions with nutrient-dependent life history traits.

13.55-14.15 **Alexandre Fernandes** (University of Cambridge, UK). Evolution of multicellular reproduction through co-option of ecological interactions.

14.15-14.35. **Matthew Asker** (Max Planck Institute for Evolutionary Biology, Germany). The effect of mutation size on population adaptation in SK fitness landscapes.

13.15-14.35 Contributed Talks: Session 13

Venue: Sir Bob Burgess Building, Lecture Theatre 2.

13.15-13.35. **Luca Madita Nieding** (TU Braunschweig, Germany). A 2D coupled reaction-diffusion model of metabolic resistance in agriculture.

13.35-13.55. **Nikhil Sharma** (Max-Planck-Institute for Evolutionary Biology, Plön, Germany). Spatially heterogeneous habitats incentivize philopatry.

13.55-14.15 **Joydev Halder** (Tata Institute of Fundamental Research, India). A higher order numerical scheme to a nonlinear McKendrick-Von Foerster equation with singular mortality.

14.15-14.35. **Soumak Nag** (University of Hyderabad, India). Global stability of an age-structured SIS epidemic model with nonlinear force of infection.

14.40-15.00 **Closing address and end of meeting**

Venue: Sir Bob Burgess building, Lecture Theatre 1.