

Mathematical Modelling in Ecology and Evolution

Session, Symposium & Plenary Details

University College Cork · 21–24 July 2026

S = Conference session · SM = Symposium · P = Plenary

Plenary Talks

Tuesday 09:15–10:00 · G05

Prof Volker Grimm — Helmholtz Centre for Environmental Research - UFZ

Agent-Based Models and System Dynamics: you should never walk alone

Abstract to be confirmed.

Tuesday 17:00–19:00 · Aula Maxima — Public Talk & Reception

Prof Alan Hastings — University of California, Davis

An Inverse Approach for Understanding Ecological Coexistence

Abstract to be confirmed.

Wednesday 09:00–09:45 · G05

Prof Anne Kandler — Max Planck Institute for Evolutionary Anthropology

Mathematical models in cultural evolution: Bridging theory and data

Abstract to be confirmed.

Thursday 09:00–09:45 · G05

Prof Johnathon A. Sherratt — Heriot-Watt University

Vegetation Patterns: From African Deserts to Scottish Hillides

Abstract to be confirmed.

Thursday 13:00–13:45 · G05

Prof Barbora Trubenová — ETH Zurich

From theory to therapy: Investigating drug resistance evolution across disciplines and taxonomic boundaries

Abstract to be confirmed.

Friday 11:00–12:00 · G05

Prof Maria McNamara — University College Cork

TBC

Abstract to be confirmed.

Tuesday 21st July

10:30–12:00 — Opening Parallel Sessions (3 talks each)

S1 G01 Fitness Landscapes & Epistasis

- 1. Generating fitness landscapes with custom patterns of global epistasis; towards a more predictive understanding of evolution**
Anna Sigalou, Juan Díaz-Colunga
- 2. Submodular Epistasis: Consequences for Accessibility and Relevance in Empirical Fitness Landscapes**
Daniel Oros, Joachim Krug
- 3. Apparent maladaptation and the equilibrium distribution of fitness effects in Fisher's geometric model**
Laura Hayward, Kseniia Khudiakova, Nicholas Barton

S2 G02 Structure & Stability of Ecological Networks

- 1. Modularity increases the resilience of tree-liana interaction networks by reducing destabilising feedback**
Rémi Legrand, Franziska Koch, Bismark Ofosu-Bamfo, Korinna Allhoff
- 2. Phenologically Explicit Robustness Metric Reveals Increased Vulnerabilities in Temporal Plant-Pollinator Networks**
Raoul Scribbans, Tim Rogers, Michael Pocock, Richard James
- 3. Origins of instability in ecological networks**
Tim Rogers

S3 G03 Pest, Invasion & Biocontrol

- 1. Interactions among pest control methods: How to deal with the pest life cycles ?**
Quentin Guilloit, Louise Van Oudenhove, Elisa Thebault, Thierry Spataro
- 2. A temperature-dependant spacial model to optimise sterile male releases for *Drosophila suzukii***
Jules Guilberteau, Louise van Oudenhove
- 3. Optimal surveillance and control in a source - recipient invasion system under imperfect detection**
ANUJ KUMAR UMRAO, Adam Lampert

S4 G04 Evolutionary Game Theory: Stochastic Dynamics & Networks

- 1. Emergence of polymorphism in stochastic evolutionary games**
Bill Nunn, Tim Rogers, Marcel Ortgiese
- 2. Structure and strategy: how evolutionary games influence interaction networks**
Christoph Riedl, Rory Smead, Seyed-Ahmad Ahmadi
- 3. Evolutionarily stable strategies in multiplayer games: The viewpoint of an invader**
Felipe Murgel, Max Souza

S5 G05 Coevolution: Hosts, Parasites & Metacommunities

- 1. Failure of the Fittest: Limits of Asexual Adaptation to Environmental Change in Finite Populations**
Rebekah Hall, Vincent Calvez, Matthew Osmond
 - 2. Host-Parasite Coevolution in Complex Landscapes**
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Saismit Naik, Jhelam Deshpande, Oliver Kaltz, Emanuel Fronhofer

3. Coevolution of dispersal, adaptation, and competition in stochastic metacommunities

Purna Singh, Lynn Govaert

13:00–14:45 — Symposia

SM1 G01 Mathematical genetics of pedigrees

Organisers: *Noah Rosenberg, John Wakeley*

1. Genetic contribution of ancestors in the biparental Moran model

Camille Coron

2. Patterns of coalescence and genetic variation in autotetraploid species conditional on the population pedigree

John Wakeley

3. Convergence to a conditional ancestral recombination graph for diploid exchangeable population models given the pedigree

Frederic Alberti

4. Shared ancestors and the birthday problem

Noah Rosenberg

SM2 G02 Modelling eusocial systems

Organisers: *Arthur Weyna, Malvika Srivastava*

1. Adaptive evolution of eusocial ant colonies with antagonistic selection and genetic drift

Malvika Srivastava

2. Early-season helping yields increasing returns to scale at the onset of eusociality

Tom Wenseleers

3. How Energy Transfers Between Kin Affect Life History Evolution

Ms Piret Avila

4. Simple behavioral rules are sufficient to produce Hymenoptera social diversity

Daniel Jorge

SM3 G03 The evolution of reproductive systems

Organisers: *Ewan Flinham, Thomas Lesaffre*

1. Is there a causal link from gametes to sexual selection and the evolution of reproductive strategies?

Dr Jussi Lehtonen

2. Modelling condition dependent female preferences and their evolutionary consequences.

Julie Roux

3. Selection-mutation stationary distributions of resource allocation to male and female functions

Sylvain Billiard

4. The eco-evolutionary dynamics of sexual traits that increase mate encounter rates

Courtney Fitzpatrick

SM4 G04 Modelling the BEF Relationship using Species' Relative Abundances - The Diversity-Interactions Approach

Organisers: *Laura Byrne*

1. Diversity-Interactions models for predicting the total response and breakdown by species proportions in biodiversity experiments

Laura Byrne

2. **Asymptotic inference for ecosystem multifunctionality based on multivariate Diversity-Interactions models**
Die Hu
3. **The Diversity-Interactions (DI) approach for modelling the biodiversity and ecosystem function relationship**
Rishabh Vishwakarma
4. **Modelling proportional responses using beta mixed-effects Diversity-Interactions models**
Rouven Lattner

SM5 G05 Pattern formation in socio-ecological systems

Organisers: Denis Patterson, Daniel Cooney

1. **Pattern formation and regime shifts in spatial stochastic vegetation models**
Denis Patterson
2. **Vegetation patterns in heterogeneous drylands and their consequences for ecosystem resilience.**
Ricardo Martinez Garcia
3. **Emergence of opinion clusters in bounded-confidence dynamics on networks: a mean-field analysis**
Alina Dubovskaya
4. **Spatial dynamics of a hybrid mathematical model describing the ecological transitions of the boreal forest ecosystem perturbed by fires**
Guillaume Cantin

15:15–17:00 — Parallel Sessions

S6 G01 Epidemic & Disease Transmission Models I

1. **Transmission dynamic modelling to understand the impacts of vaccines on antibiotic resistance epidemiology: a systematic review**
Madison Luick, Natasha Salant, Shiela Marie Selisana, Aye Nandar Mynit, Chittawan Poonsiri, Koen Pouwels, David RM Smith
2. **Cost-effectiveness of female-only and gender-neutral HPV vaccination strategies in Japan**
Minjin Kim, Eunha Shim
3. **Transmission mode impacts the spread of a parasite in a spatially structured host population**
Franziska A. Brenninger, Xiang-Yi Li Richter
4. **Optimal long-run control of endemic infections: bang–bang threshold policies in a stochastic SIS-model**
Matthew Buckland, Sören Christensen, Philip Le Borne, Cornelia Pokalyuk

S7 G02 Adaptive Dynamics & Life History Evolution

1. **Evolutionary Branching: Road to Coexistence and Dynamics of Separation**
Manuel Esser, Nicolas Champagnat
2. **Adaptive Dynamics in Changing Environments: From Single Traits to Correlated Strategies**
Sakshi Pahujani, Yuna Zhang, Markus Stetter, Joachim Krug
3. **Evolution of dispersal in a spatially heterogeneous population with finite patch sizes and catastrophes**
Kalle Parvinen, Hisashi Ohtsuki, Joe Yuichiro Wakano
4. **Evolution of fast and slow life histories in an unstable environment**
Éloi Martin

S8 G03 Community Ecology & Species Coexistence

1. Local negative frequency dependence can decrease global coexistence in fragmented populations

Anush Devadhasan, Oana Carja

2. Multi-scale ecological processes during assembly drive predictable community structure

Jonathan A. Sutton-Smutná, Vincent A. A. Jansen, David Tilman, Jane A. Catford

3. Does diversity always increase with dormancy? Insights from a theoretical multi-species approach

Agathe Chave-Lucas, Juan Giral Martinez, Silvia De Monte, Régis Ferrière

4. Disturbance-generated coexistence

Ursula Trigos-Raczkowski, Rainey Lyons, Matias Delgadion, Azmy Ackleh, Annette Ostling

S9 G04 Spatial Models, PDEs & Pattern Formation

1. Modelling and inference of wildfire spread dynamics in UK moorland environment.

Axa-Maria Laaperi, Laura Wadkin, Nick Parker, Andrew Baggaley

2. The topology of ecological drift

Ata Kalirad, Ralf Sommer

3. Real-world complexity restricts tipping points and alternative stable states

Santanu Das, Niv DeMalach, Nadav Shnerb

4. Finite-population corrections to mean-field for weakly interacting diffusions

Armand Bernou

S10 G05 Cultural Evolution & Social Learning

1. Evolutionary dynamics of language competition

Nate Bryerton, Sameul Feenane-Levine, Maxwell Goskie, Jason Rackas, Hope Pungello, Zhijun Wu

2. Social learning and information transmission in online chess

Egor Lappo, Uma Dayal, Marcus Feldman, Noah Rosenberg

3. Sequential Accumulation of Independent Cultural Traits: A neutral model for cumulative cultural dynamics

Fredrik Scheie, Fredrik Jansson, Jonas Sjöstrand

4. How cultural systems reshape selection in cultural evolution

Fredrik Jansson, Magnus Enquist, Jérôme Michaud, Anandi Hattiangadi

Wednesday 22nd July

10:15–12:00 — Symposia

SM6 G01 Evolution on complex and dynamic fitness landscapes

Organisers: *Julio Ayala-Lopez, Loraine Hablützel*

1. A simple model illustrates how adaptive walk endpoints can be biased towards the highest peaks on rugged fitness landscapes

Nora Martin

2. Benchmarking empirical fitness landscapes with a random null model: New results on an old problem

Prof. Joachim Krug

3. Ecological feedback shapes the evolution of antibiotic resistance in *E. coli*

Pietro Gadaleta

4. The ruggedness of eco-evolutionary fitness landscapes of resource competition

Suman Das

SM7 G02 Evolutionary graph theory: beyond fixation probabilities on graphs.

Organisers: *Nikhil Sharma, Mark Broom*

1. Maintaining diversity in structured populations

David Brewster

2. Death rate drives the suppression of natural selection in structured populations

Max Dew

3. Fixation probability on metapopulations with asymmetric migration

Akanksha Singh

4. Mutation-Selection Balance on Graphs

Nikhil Sharma

SM8 G03 The genetic and developmental bases of G-matrix evolution

Organisers: *Isabela do Ó, Vitor Sudbrack*

1. The effect of supergene evolution on the structure and stability of the additive genetic variance-covariance matrix

Vitor SUDBRACK

2. Mind the process: a tripartite GP map may bridge the micro-to-macro divide

Mihaela Pavlicev

3. The Developmental Basis of the G-matrix

Lisandro Milocco

4. Evolution of genetic correlations: from models to experiments

Frederic Guillaume

SM9 G04 Rethinking density-dependence in eco-evolutionary systems

Organisers: *Giulia Ghedini, Emma Horton*

1. Why Do Populations Slow Down? Rethinking Growth Rate Density Dependence

Onofrio Mazzarisi

2. Superlinearity: the null expectation for density dependence?

Andrew Letten

3. How does evolution shape density dependence, species interactions and long-term coexistence

Inês Fragata

4. Coevolution of dispersal, adaptation, and competition in stochastic metacommunities

Prerna Singh

SM10 G05 Towards a quantitative theory of microbial communities: current modelling approaches and perspectives

Organisers: *Vitor Marquioni Monteiro, Florian Labourel*

1. A New Modeling Framework for Invasion Resistance in Microbial Communities

Erida Gjini

2. Evaluating data-driven methods for the design and optimization of microbial consortia

Juan Díaz Colunga

3. Multilevel selection in multi-type populations

Amanda de Azevedo-Lopes

4. Generalized Lotka–Volterra vs. metabolic models as predictive tools for the gut microbiome

Meike Wortel

13:00–14:45 — Parallel Sessions

S11 G01 Epidemic & Disease Transmission Models II

1. The Impact of a Cut-off on Front Propagation in a Fox-Rabies Reaction-Diffusion System

Zak Sattar, Nikola Popovic, Mariya Ptashnyk

2. Social cues drive the evolution of plastic pathogen virulence in spatially and temporally variable environments

Ryuichi Kumata, Sébastien Lion, Edze Westra, Sylvain Gandon

3. Modeling the impact of antigenic distance and immune imprinting of sequential viral infections on disease severity

Hayriye Gulbudak, Nazia Afrin, Anna Jolles

4. Prey-predator network dynamics determined by fitness landscape with application to HIV immune escape

CAMERON BROWNE

S12 G02 Eco-Evolutionary Dynamics

1. Repeatability of adaptation in interacting species

Loraine Hablützel, Ailene MacPherson, Claudia Bank

2. Eco-evolutionary dynamics in competitive systems: coevolution mitigates the potential for evolutionary rescue

Simon Leoz, Lynn Govaert, Korinna Allhoff, Frithjof Lutscher

3. Between Friends and Foes - Evolutionary Diversification in Mutualistic-Antagonistic Networks

Felix Jäger, Nicolas Loeuille, Youssef Yacine, Korinna Allhoff

4. The role of fitness landscapes for eco-evolutionary dynamics of biodiversity and interaction networks

Dimitrios Nakos, Malina Palmer, Frank Schurr, Korinna Allhoff

S13 G03 Plant Population Dynamics & Mating Systems

1. Invasion of a self-compatible mutant allele under sporophytic self-incompatibility: Diploids VS Tetraploids

Diane Douet, Sylvain Billiard, Xavier Vekemans, Josselin Clo

2. Multi-level robustness in plant systems: A general modelling framework

Franziska Koch, Korinna T. Allhoff, Frank M. Schurr

3. Beyond Resource Budgets: The Evolution of Masting through Flower Induction Inhibition

Eloi Chauvet, Timothé Renard, Sabrina Gastebois, Thomas Koffel, Samuel Venner

4. How seed banks evolve in plants: a stochastic dynamical system subject to a strong drift

Joao Luiz de Oliveira Madeira, Alison Etheridge

S14 G04 Animal Behaviour

1. Modeling optimal dispersal of juvenile birds

Ted Galanthay, Whitman Fowlkes, Kate Hartke, Thomas Narramore

2. Learning to be biased: the evolution of priors under uncertainty

Katherine Di Iorio, Tom Sherratt

3. Relative trait value within groups drives arms race dynamics in predator-prey systems

Yi Sun, Tom Keaney, Hanna Kokko

4. Adaptive dynamics of discriminate and indiscriminate mating

Ben Allen, Samatha Rothberg, Brian Lerch

S15 G05 Stochastic & Theoretical Approaches in Mathematical Biology

1. Evolution of extrachromosomal DNA in non-growing cell populations

Alan Scaramangas, Weini Huang, Dudley Stark

2. From disordered systems physics to complex ecosystems: the many-species Lotka-Volterra model

Joseph Baron

3. Recombination Peaks

Kristina Crona

4. Non-trivial Statistical Effects of the Lotka-Volterra - Replicator Dynamics Mapping

Calina Durban, Arne Traulsen

Thursday 23rd July

10:15–12:00 — Symposia

SM11 G01 Dynamics and persistence of internal evolutionary conflicts

Organisers: *Gaurav Athreya, Shikhara Bhat, E. Yağmur Erten*

1. A PDE Model for Protocell Evolution and the Origin of Chromosomes via Multilevel Selection

Daniel Cooney

2. A formal theory of group-level adaptation for obligate eusociality

Kalyani Twyman

3. How many routes exist to the emergence of an internal evolutionary conflict?

Gaurav Athreya

4. X-linked meiotic drive can boost population size and persistence

Carl Mackintosh

SM12 G02 Theoretical developments in evolutionary game dynamics

Organisers: *Fabio Chalub, Mark Broom*

1. Dynamical compatibility for finite and infinite population models used in genetics

Fabio Chalub

2. Predator-dependent replicator dynamics or a predator-prey model with two prey types and frequency dependence

Armando Neves

3. Stability and the survival of competing species

Sofia Castro

4. Multi-agent reinforcement learning through the lens of evolutionary game dynamics

Johann Bauer

SM13 G03 Sweeps, Clicks, and Scales: Models with selection and recurrent mutations

Organisers: *Anton Wakolbinger*

1. Towards the Rate of Muller's Ratchet

Carola Heinzl

2. Logarithmic scaling of sweeps, and clonal interference in the Gerrish-Lenski regime

András Tóbiás

3. Clicks (and sweeps) with tournament selection

Anton Wakolbinger

4. The accumulation of beneficial mutations and convergence to a Poisson process

Nantawat Udomchatpitak

SM14 G04 Heterogeneity patterns in structured populations with and without selection

Organisers: *Cornelia Pokalyuk, Vianney Brouard*

1. Spatial Pattern Formation and the Evolution of Cooperative Behavior

Daniel Cooney

2. Metacommunity persistence on spatially heterogeneous landscapes

Madeleine Kubasch

3. Evolutionary dynamics of a fragmented population in a mean-field network of interconnected demes

Josue Tchouanti Fotso

4. Selection of the fittest or selection of the luckiest: the emergence of Goodhart's law in evolution

Zsofia Talyigas

SM15 G05 Mathematical Models in Cultural Evolution

Organisers: *Patrick Lauer, Madeleine Ammar, Niccole Porras Alvarez, Alfredo Cortell-Nicolau*

1. Why cultural traits become cultural packages.

Patrick Lauer

2. Linking cultural rules to admixture outcomes

Niccole Porras

3. Gene-culture association and coevolution - haploids and diploids

Laurel Fogarty

4. The coevolution of learning schedules and teaching enhances cumulative knowledge and drives a teacher-innovator syndrome

Dr Charles Mullon

13:45-15:30 — Parallel Sessions

S16 G01 Cancer Evolution & Tumour Dynamics

1. The evolutionary fitness landscape of extrachromosomal DNA in cancer

Magnus Haughey, Benjamin Werner

2. Investigating the eco-evolutionary dynamics of colorectal cancer liver metastasis through mathematical modelling and spatial analysis

Xiaoyuan Liu, Xiao Fu

3. Radiotherapy as an evolutionary force: modeling phenotypic heterogeneity and treatment response in tumors

Lara Schmalenstroer, Daniel Hoffmann, Russell Rockne, Farnoush Farahpour

4. Mathematical Modelling of Stochastic Gene Expression Quantifies mRNA Heterogeneity in Cancer Cell Populations with Extrachromosomal DNA

Poulami Somanya Ganguly, Weini Huang

S17 G02 Senescence, Ageing & Life History Theory

1. A life history model of continuous growth and negative senescence with damage accumulation and maintenance

Arttu Soukainen, Piret Avila

2. Gompertzian mortality, selective disappearance, and apparent late-life plateaus from the first principles of stochastic failure accumulation

Shikhara Bhat, Hanna Kokko

3. When can hidden heterogeneity be ignored? Collapsing projection matrices while preserving population dynamics

Amy Forsythe, Sarah Otto, Troy Day

4. Extending Structured Population Models to Intermediate Group Organization

Thomas Martin

S18 G03 Ecological Stability, Perturbations & Tipping Points

1. Predicting the worst-case timing of multiple pulse perturbations

James Orr, Alicia Williams, Yu-Pei Tseng, Michelle Jackson, Andrew Letten, Jean-François Arnoldi

2. Biodiversity collapse in Ullswater? Modelling the population dynamics of a data-poor fishery

Eilidh Thompson, Jon Pitchford, Brennen Fagan, Harrie Neal, Mo Verhoeven

3. Threshold-Driven Collapse and Recovery in a Simplified Wasp-Waist Ecosystem Mode

Sam Subbey, Kamil Hlubek, Anna-Simone Frank

4. Geometric conditions for the Global Stability and Mutuality in Ecosystems Driven by a Quadratic Growth Term

Gustav Lindwall, Arne Traulsen

S19 G04 Evolutionary Dynamics of Gene Regulatory Networks

1. Complexity as the by-product of sub-optimal evolutionary histories in multi-optima fitness landscapes

Elliot Butterworth, Tim Rogers, Matthew Wills

2. Evolution of Gene Regulatory Networks under Negative Frequency-Dependent Selection

Ritam Das, Charles Mullan

3. The Evolution of Phenotypic Heterogeneity in the Bacterial Flagellar Network: Biophysical Constraints and Mechanistic Epistasis

Murat Tugrul

4. The role of non-genetic architecture in evolution and survival.

Puneeth Deraje, Troy Day, Matthew Osmond

S20 G05 Social Evolution

1. Social learning for population adaptation

Dharanish Rajendra, Chaitanya Gokhale

2. Evolution of informed dispersal strategies in trophic meta-communities

Yuriy Pichugin, Corina Tarnita

3. Co-evolution between inherited family reputations and reciprocal behaviours

Miguel dos Santos, Hisashi Ohtsuki, Charles Mullan

4. The coevolution of cooperation and socially-mediated dispersal under kin competition

Iris Prigent, Charles Mullan

16:00–17:45 — Parallel Sessions

S21 G01 Population Genetics

1. Analytical expectations for ancestry junction accumulation in admixed genomes

Shirin Nataneli, Aydin Loid Karatas, Tessa Ferrari, Roshni Patel, Jazlyn Mooney

2. A new twist to an old tale: A distance-space framework for inferring selection

Sina Roshandel, Kamran Kaveh, Farnoush Farahpour

3. Efficient inference of birth-death processes from site frequency spectra

Tobias Dieselhorst, Marcus Overwater, François Bienvenu, Tanja Stadler

4. Propagation of exchangeability and moment duality.

Ariel Offenstadt, Adrian Gonzalez Casanova, Arno Siri Jégousse

S22 G02 Evolutionary Genetics & Ploidy

1. The coevolution of sex and ploidy in haploid-diploid life cycles

Carl Mackintosh, Denis Roze

2. A mathematical synthesis of genetics, development, and evolution

Mauricio González-Forero

3. Hitchhiking effects in polygenic adaptation

Archana Devi, Joachim Hermisson, Himani Sachdeva

4. The effect of hybrid incompatibilities on a cline

Julio A. Ayala-López, Stephan Peischl, Claudia Bank

S23 G03 Marine & Aquatic Ecosystem Modelling

1. Mathematical Analysis of Alternative Formulations of a Three-component Mechanistic Model of Plankton Allelopathy and Species Competition

Trisha Maitra, Shovonlal Roy

2. Using a coupled hydrodynamic-particle tracking model to inform aquatic animal disease zoning

Samuel Shute, Sophie Armitage, Claire Beraud, Jacob Harper, Mickael Teixeira Alves

3. Predicting the impacts of anthropogenic N:P imbalances on greenhouse gas fluxes from lakes with synergistic metabolism between phytoplankton and methanotrophs

Oliver Ward, Helen Kettle

4. A semi-analytical inverse framework for retrieving phytoplankton abundance from satellite observations

Shovonlal Roy

S24 G04 Trait Evolution & Selection Dynamics

1. The evolutionary consequences of the geometry of adaptation

Florian Labourel, Florence Bansept, David McCandlish

2. Stochastic Eco-Evolutionary Dynamics of Multivariate Traits: A General Framework and Implications for G-Matrix Evolution

Bob Week

3. Ornaments evolve faster than weapons

Mohammadali Dashtbali, Louisa Hutton-Adams, Megan Watts, Jonathan M. Henshaw, William L. Allen

4. The evolution of mutualism from mutually beneficial common goods

Lewis Flinham, Andrew Pomiankowski, Vincent Jansen

S25 G05 Evolution of Cooperation & Social Dynamics

1. The effects of herding and dispersal behaviour on the evolution of cooperation on complete networks

Mark Broom, Hasan Haq, Pedro Schimit

2. Judging honesty, hindness or something else? - How we use arrangements to overcome the Prisoner's Dilemma

Marcus Krellner

3. Mind the Gaps: How the Spiral of Silence Could Drive Partisan Misperception in the United States Political System

Daniel Levy, Yphtach Lelkes, Naomi Leonard, Corina Tarnita

4. Survival Selection Promotes Cooperation on Dynamic Networks

Jacob Chisausky, Gerald Carter, Corina Tarnita

Friday 24th July

09:00–10:45 — Parallel Sessions

S26 G01 Microbial Population Dynamics

1. Stories of migration and diversification in microbial populations experiencing a biphasic lifestyle

Florence Bansept, Leon Espinosa, Cécile Carrère

2. Maximizing the gut Shannon diversity via intermittent feeding

Vitor M. Marquioni, Ann-Cathrin Hofacker, Jocksan Villavicencio Villavicencio, Florence Bansept

3. Unifying Bet-Hedging and Horizontal Gene Transfer: The Evolution of Bacterial Immunodeficiency in Fluctuating Environments

Emma ACACIA, Xavier Charpentier, Charles Coluzzi, Thomas Koffel, Samuel Venner, Rémi Tuffet

4. Drivers and detriments of the spatial heterogeneity of harmful cyanobacterial blooms

Jacob Serpico

S27 G02 Metabolic Ecology, Resource Allocation & Ecotoxicology

1. Probing the drivers of metabolic density-dependence in phytoplankton

Giulia Ghedini

2. Tradeoffs between heterotrophic and autotrophic strategies in marine microbial responses to changing oceans

Christopher Peterson, Suzana Leles

3. Energy allocation and fitness: using DEB theory to model metal-induced trade-offs in a sentinel species

Mélanie Debelgarric, Olivier Geffard, Juliette Dardé, Christelle Lopes

4. Optimizing the resource allocation between biochemical defence and counter-counter defence in pathogenic and trophic interactions.

Lukas Korn, Stefan Schuster

S28 G03 Applied Mathematical Biology

1. Mathematical Modelling of azo dye biodegradation

Ajay Minj

2. Modelling epidemiological and economic impacts of diseases in complex aquaculture production networks

Mickael Teixeira Alves, Sophie Armitage, Adam Kennerley, Jacob Harper, Mark Thrush

3. Persistent and Transient Outbreak Potential for Insect-Borne Plant Viruses within Multi-Host Environments

Blake McGrane-Corrigan, Jon Yearsley

4. Ecology in Chemical Reaction Networks: Concentration Threshold for Single-resource Competition Between Autocatalytic Cycles

Iris Magniez--Papillon, Thomas Koffel, Sylvain Charlat, Denis Kuperberg, Etienne Rajon

S29 G04 Data-Driven Methods & Machine Learning

1. Diffusion map based forecasting from eDNA abundance time series

Albertas Dvirnas

2. Combining reinforcement learning and simulation-based inference to disentangle the cognitive and behavioural mechanisms underlying selection-induced differences in a zebrafish inhibitory learning experiment

Valentin Lecheval, Tamal Roy, Robert Arlinghaus, Pawel Romanczuk

3. Data-Driven Learning of Transfer Operators for Aggregation and Swarming Phenomena

Nathalie Wehlitz, Grigorios A. Pavliotis, Christof Schütte, Stefanie Winkelmann

4. Mapping niches to trait abundance clusters using a more flexible clustering model

Satavisha De, Bahar Talebzadeh, Jin Lu, Annette Ostling

S30 G05 Population Dynamics: Ecology & Applied Models

1. How Biodiversity Metrics Change with Changing Habitats

Brennen Fagan, Inês S. Martins, Jon W. Pitchford, Chris D. Thomas

2. Beyond the damping ratio: Estimating species recovery time after disturbance using matrix population models

MacDara Allison, Kirk Soodhalter, Biswajit Basu, Nessa O'Connor

3. Law of large numbers for a growth-fragmentation-coagulation model

Elie Cerf, Coralie Fritsch, Denis Villemonais, Alex Watson

4. A mathematical study of a crop-pest-natural enemy model with Z-type control.

Dibyendu Sekhar Mandal, Abdennasser Chekroun, Sudip Samanta, Joydev Chattopadhyay