FLACAM 2019

French Latin-American Conference on New Trends in Applied Mathematics

5 - 8 November, Santiago – Chile

Practical information

To Flacam conference attendees:

Please find here below some relevant practical informations regarding the upcoming Flacam 2019.

1. Venue of the conference

Flacam 2019 will be held at the Faculty of Physical and Mathematical Sciences of the University of Chile (located at Beauchef 851, Santiago). More specifically, the entire conference will be held at the "Beauchef 851" Campus of this Faculty, the modern building located on the west side of Beauchef Street.

The conference venue can easily be reached by metro, taxi and Uber (or similar services).

See http://eventos.cmm.uchile.cl/flacam2019/venue/ for more details.
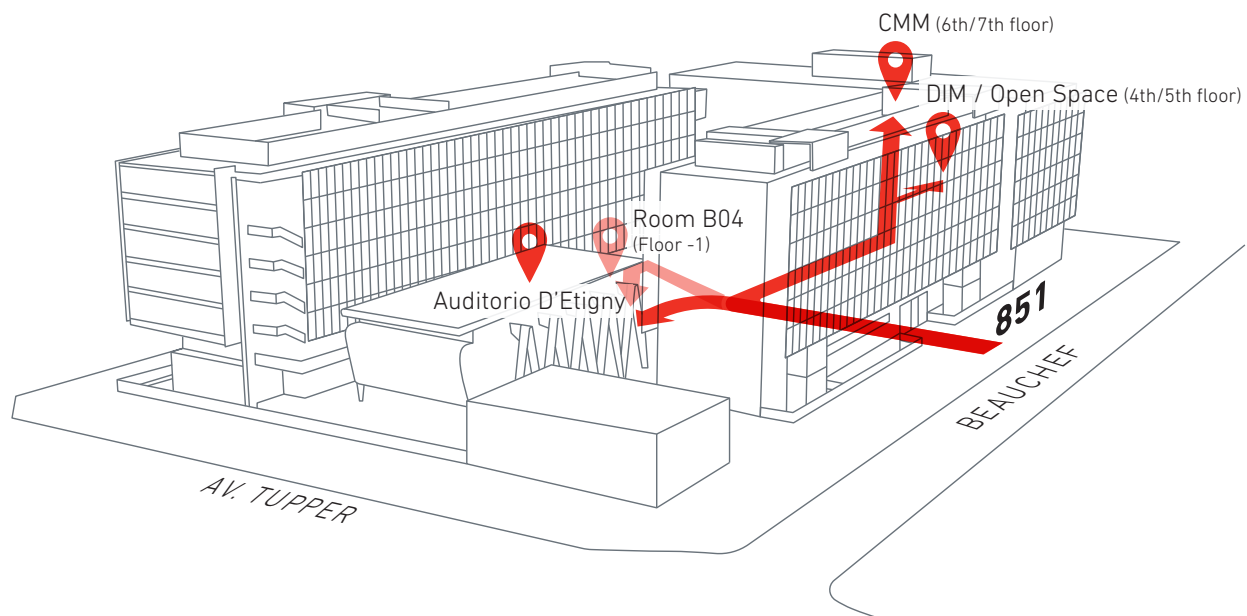
2. Transportation from Santiago Airport to hotels/ conference

You have at least three possibilities:

1) By taxi: There are official taxi services after the luggage claim and customs control, just before living the airport. The price of a ride from the airport to the conference is around US$ 20 - 25, and to Providencia district (where most of the hotels are located) is around US$25 - 30.

There are unofficial taxies outside the airport, but this is not recommended. Uber and related services are not allowed from the airport.

2) By shuttle: This service costs around US$10 - 12 to the conference place or Providencia. You should buy the ticket in the same place where official taxi services are located.

3) By bus + subway: There are also buses departing from airport to subway ("Pajaritos" Station, line 1(red)). It costs around US$ 2. A "Metro" (subway) ticket costs US$1.2 dollar approx. This is of course slower than previous options and, since the subway service has been perturbed in the last days, we recommend you chose one of the two options above.

Before departing, we recommend that you check the conditions of your flight tickets with your airline or travel agency.

3. Practical information: restaurants near the conference & accommodations

We have published a list of restaurants near the conference. Since there are no organized lunches by the conference, we recommend you give a look to this list in advance.

At this stage, we expect that all of you have already booked your accommodation but, if not, there is still some available rooms in the hotels we propose you in the conference website. We recall you that by default we are not booking hotels. Please contact us if you still need some help to book your hotel.

We recommend that you avoid booking hotels or apartments in downtown ("Santiago Centro"). The nearby districts ("comunas") such as Providencia, La Reina, Las Condes and Ñuñoa are better located.

See http://eventos.cmm.uchile.cl/flacam2019/practicalinfo/ for more details.

4. Registration

The official registration is on Tuesday the 5th, between 13h30 and 14h30. The registration desk will be located next to D'Etigny auditorium (where the plenaries will take place). All attendees must register. In case you are not able to register on Tuesday please approach one of the chairs, Gladys Cavallone (secretary of the conference) or any member of the organizing staff. We will be glad to help you.

Note that badges must be worn at all sessions and events. The access to the campus is controlled and the badge will be the only way used by guards to recognize you as part of the conference.

5. Program

The conference program will have significant changes: Doctor Honoris Causa ceremony (to Prof. Antoine Petit, CEO CNRS) has been canceled, the duration of plenary talks is now 40 mins and the duration of all the workshops will be reduced in order to finish at 15h30 or 16h00, depending on the workshop. This is done with the aim of facilitating the transport of participants to their hotels. We are also considering other measures.

See http://eventos.cmm.uchile.cl/flacam2019/program/ for more details.

6. Internet access

If your home institution participates in eduroam and you have an account, you can directly connect to the eduroam Wi-Fi of the campus. At this moment, we are not providing other internet access.

7. About the situation in Chile

The situation in Santiago has stabilized significantly. The airport works normally as well as taxis, Uber and related services. Subway is partially operational, and the curfew has been lifted in all the country. However, there are still some riots in specific spots of Santiago, mainly in downtown, but they are not near our campus.
You can check travel advisories from the US State Department, the UK Foreign Office and France's diplomacy in the following links:

- https://travel.state.gov/content/travel/en/international-travel/International-Travel-Country-Information-Pages/Chile.html
- https://www.gov.uk/foreign-travel-advice/chile
- https://www.diplomatie.gouv.fr/fr/conseils-aux-voyageurs/conseils-par-pays-destination/conseils-aux-voyageurs-conseils-par-pays-chili/

8. Contact

In case of doubts, you can contact us via our email account <flacam2019@cmm.uchile.cl>

In case of urgency, please contact:

Héctor Ramírez: +56 9 76954958 (preferably via WhatsApp or text)
Gladys Cavallone: +56 22 978 4443 (only available on working hours: from 9:00 to 17:00 hrs.)

Program overview

	Tuesday, Nov 5
13:30–14:30	Registration
14:30–14:50	Opening words
14:50–15:30	Sylvie Méléard
15:30–16:10	Raimund Bürger
16:10–…	Social activity

	Wednesday, Nov 6	Thursday, Nov 7	Friday, Nov 8
9:00–9:40	Jean Dolbeault	Yoshiharu Kohayakawa	Claudia Sagastizábal
9:40–10:20	Fabien Durand	Salomé Martínez	Eric Bonnetier
10:20–11:00	Coffee break	Coffee break	Coffee break
11:00–12:30	Parallel sessions W1	Parallel sessions Th1	Parallel sessions F1
12:30–14:00	Lunch	Lunch	Lunch
14:00–16:00	Parallel sessions W2	Parallel sessions Th2	Parallel sessions F2

Plenary talks abstracts

Homogenization and the Neumann-Poincaré operator

Eric Bonnetier (Université Grenoble-Alpes, France)

Nanometric metallic particles may resonate when excited by visible light at particular frequencies. The resulting concentration of electromagnetic energy around the particles proves quite appealing for many applications in opto-electronics. In the small frequency-electrostatic regime, this phenomenon is modeled by a diffusion equation with a piecewise constant conductivity, which is positive in the background dielectric material, but negative inside the particles. The Neumann Poincaré operator is an integral operator that stems from the representation of the solutions to such PDE's using layer potentials : its eigenfunctions are closely related to plasmonic resonances.

We study this integral operator when the homogeneous background medium contains a collection of periodically distributed inclusions (particles) with negative conductivities. We show that, as the period tends to~0, its spectrum converges to a limiting set that consists of two parts, a Bloch spectrum and a boundary-layer spectrum. The former is the union of the spectra of integral operators associated with quasi-periodic resonances, defined on the periodicity cell. The latter corresponds to eigenfunctions localized near the boundary of the macroscopic domain.

If the conductivity inside the inhomogeneities lies outside the spectrum of the periodic Neumann Poincaré operator, we show that bounded sequences of solutions of the corresponding PDE weakly converge to a homogenized limit. The associated effective matrix is defined by a cell-problem of the usual form, as in the case of an elliptic operator. Conversely, if the homogenized source problem is not well-posed, the conductivity inside the inclusions must lie in $\lim_{\varepsilon \to 0} \sigma_\varepsilon$. This cannot happen when the inclusions are strictly contained in the periodicity cells and if the absolute value of their conductivity is sufficiently large.

This is joint work with Charles Dapogny and Faouzi Triki.

On conservation laws and multilayer shallow water systems modeling flotation and sedimentation

Raimund Bürger (Universidad de Concepción-CMM, Chile)

This presentation deals with the theory, numerical methods, and applications of two different first-order quasilinear systems of time-dependent PDEs that describe gravity-driven solid-liquid separation processes. Applications include mineral processing, wastewater treatment, and geophysics, and are related to the Chilean economic and geographic reality.

The first part of the talk deals with the continuous unit operation of flotation that is extensively used in mineral processing, wastewater treatment, and other applications for selectively separating hydrophobic particles (or droplets) from hydrophilic ones, where both are suspended in a viscous fluid. The hydrophobic particles are attached to gas bubbles that are injected and float as aggregates forming a foam or froth at the top that is skimmed. The hydrophilic particles sediment and are discharged at the bottom. The flotation column is described by studying three phases, namely the fluid, the aggregates, and solid particles, in one space dimension. The resulting model is a triangular system of two scalar conservation laws for the aggregates and solids volume fractions with a multiply discontinuous flux. Steady-state solutions that satisfy all jump and entropy conditions are constructed. For industrially relevant steady states, conditions on feed flows and concentrations are established and mapped as "operating charts". A numerical method is formulated on a pair of staggered grids, and is employed for the simulation of the flotation column.

In the second part, a multilayer shallow water approach for the approximate description of polydisperse sedimentation in a viscous fluid is presented. The solid species differ in density and size, segregate, and form areas of different composition. In addition, the settling of particles influences the motion of the ambient fluid. The multilayer shallow water model allows one to determine the spatial distribution of the solid particles, the velocity field, and the evolution of the free surface of the mixture. The final model can be written as a particular multilayer model with variable density where the unknowns are the average velocities and concentrations in each layer, the transfer terms across each interface, and the total mass. An explicit formula of the transfer terms leads to a reduced form of the system. A Harten–Lax–van Leer (HLL)-type path-conservative numerical method is employed to illustrate the coupled polydisperse sedimentation and flow fields in various scenarios, including sedimentation in a type of basin that is used in the mining industry and in a basin that gives rise to recirculations.

This presentation is based on joint work with Stefan Diehl (Lund University, Sweden), María Carmen Martí (Universitat de València, Spain), Enrique D. Fernández-Nieto (Universidad de Sevilla, Spain), Yolanda Vásquez, and Víctor Osores (both Universidad de Concepción).

Phase transitions and symmetry in PDEs

Jean Dolbeault (Université Paris-Dauphine, France)

The question of the symmetry of the solutions of a PDE which is invariant under a transformation is a fascinating question. If a PDE is invariant under rotations, when do we know that solutions, for instance the solutions which minimize the energy, inherit of radial symmetry? This lecture is intended to review some problems and partial answers to these questions, with a special emphasis on problems at the interface of an elliptic point of view, interpreted as the description of stationary solutions, and a dynamical approach based on related equations of evolution.

Eigenvalues and approximation of (Cantor) dynamical systems: 20 years of mathematics with the CMM and Chile

Fabien Durand (Université Picardie Jules Verne, France)

In this talk we will present a well-known and nice way to approximate dynamical systems from an ergodic and topological point of view.

We will then use these approximations to understand the existence of continuous eigenfunctions for the Koopman operator. This will be illustrated through many examples.

This will give me the opportunity to show a small part of the strong mathematical cooperation between France and Chile.

This much older cooperation gave rise to the association of the CNRS with the CMM in 2000, almost 20 years ago.

Large graphs and other combinatorial structures

Yoshiharu Kohayakawa (U. de São Paulo, Brazil)

A fundamental result in graph theory, Szemerédi's regularity lemma, tells us that large graphs can be described with a small amount of data when we are interested in certain types of problems. When we have a sequence of graphs whose orders tend to infinity, if their subgraph statistics are consistent, one can define a continuous object that is the limit of the sequence. These are the celebrated graph limits of Lovász and Szegedy. In this talk, we shall introduce and discuss some basic facts in these two approaches to the study of large graphs. Some other large combinatorial structures will also be considered.

Diffusion and competition in population and gender dynamics

Salomé Martínez (Universidad de Chile-CMM, Chile)

Reaction-diffusion models have been widely used to study fundamental questions in population dynamics. This type of partial differential equations provides a way to translate local assumptions regarding the movement, growth and interactions for the individuals of a species, into global features of the population. Thus, reaction-diffusion models provide a theoretical framework for questions such as the persistence of a species, invasions, and coexistence of populations. Mathematical tools from non-linear analysis and dynamical systems can be used to study the consequences of population characteristics have in the long-term dynamics. We will discuss how the relationship between population dispersal strategies, environmental factors and competition affects the persistence and coexistence of two species.

In this talk we will also explore issues related to the persistence and dispersal of women in a STEM environment, in which they account for less than 30% of the population. We will discuss the strategies which have been key for persistence, allowing women in STEM to grow and thrive through the formation and strengthening of networks and alliances. In particular, we will discuss the process that led to the creation of the Direction for Diversity and Gender, the first of this kind in a Faculty of Sciences, Math, and Engineering in Chile, and some research projects that the direction in pursuing.

Adaptation to a gradual environment – Research of lineages

Sylvie Méléard (École Polytechnique, France)

Directional environmental changes, such as caused by climate warming, imposes strong selection on many living organisms, which need to evolve fast enough to keep track of their changing environment. We introduce a quantitative genetics model exploring this question and consider some phenotypic trait subject to stabilizing selection around some optimal phenotype, which value is shifted continuously through time. We construct the stochastic individual based model and its deterministic PDE approximation for which we exhibit a stationary distribution. Assuming now that the density profile stays at this equilibrium, we are interested in the lineage of an individual uniformly sampled at a fixed time. Our aim is to capture the distribution of the initial value of this trajectory and to exhibit a biais in the distribution. We use a spinal approach classical for branching processes. We will also give the equation of such lineage. It's a work in progress with V. Calvez, B. Henry, F. Patout and C.V. Tran.

Defining shadow prices in industrial mathematics

Claudia Sagastizábal (IMECC Unicamp, Brazil)

In Linear Programming, the meaning of dual variables as shadow prices is well-known: Lagrange multipliers signal the marginal effect of perturbing the constraint set of an optimization problem. When the constraint expresses satisfaction of consumer demand for goods and services, the multiplier measures the willingness to pay for one more unit of the item. For an environmental constraint limiting the emission of greenhouse gases in some industrial process, the multiplier can be seen as revealing the price of decarbonizing the process under consideration.

The concept is straightforwardly applicable to Nonlinear Programming but not to optimization problems with mixed-integer variables. Industrial processes often involve binary decisions, such as turning on or off some production unit, which amounts to having some variable components taking the values 0 or 1. In this setting, the optimization problem does not have Lagrange multipliers and the useful notion of shadow price is not available.

We discuss how to circumvent this drawback by means of Variational Analysis. All along the presentation, simple examples are used to illustrate the interest of the approach. Credit to various co-authors will be given during the talk.

Workshops (parallel sessions) overview

SPET | **Stochastic Processes and Ergodic Theory**
Chair: Joaquín Fontbona

OPT | **Optimization**
Chair: Héctor Ramírez

MMIP | **Mathematical Mechanics and Inverse Problems**
Chair: Axel Osses

PDE | **Partial Differential Equations**
Chairs: Claudio Muñoz & Michal Kowalczyk

A&C | **Algorithms and Combinatorics**
Chair: Maya Stein

NPDE | **Numerical Methods for Partial Differential Equations**
Chair: Mauricio Sepúlveda

BIO | **Biomathematics**
Chairs: Alejandro Maass & Héctor Ramírez

Parallel Sessions W1, 11:00-12:30

SPET

Scaling limits of random processes and structures / Organizer: Joaquín Fontbona	
Thierry Huillet, Jean-Stephen Dhersin, Hagop Tossounian	Open Space

OPT

Energy markets / Organizers: Tito Homen-de-Mello & Héctor Ramírez	
Alejandro Jofré, Didier Aussel, Alexandre Street	D'Etigny

MMIP

Control of PDEs I / Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega	
Sebastián Zamorano, Charles Dapogny, Cristhian Montoya	B04

PDE

PDE I / Organizers: Claudio Muñoz & Michal Kowalczyk	
Van den Bosch, Carlos Román, Olivier Goubet	CMM 7th floor

A&C

Graph classes and algorithms / Organizer: Maya Stein	
Gelasio Salazar, Cristina Fernandes, Mario Valencia-Pabón	DIM 5th floor

NPDE

Numerical Analysis I / Organizers: David Mora, Manuel Solano, Mauricio Sepúlveda	
Pablo Venegas, Michael Karkulik, Rodolfo Araya	CMM 6th floor

Parallel Sessions W2, 14:00-16:00

SPET Ergodic theory and dynamical system I / Organizers: Sebastián Donoso

Jairo Bochi, Yuri Lima, Rodolfo Gutiérrez | Open Space

OPT Energy & optimal control / Organizers: Cristopher Hermosilla

Carrillo-Galvez, Anna Désilles, María Soledad Aronna | D'Etigny

MMIP Control of PDEs II / Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega

Exequiel Mallea, Roberto Morales, Nicolás Carreño | B04

PDE PDE I / Organizers: Claudio Muñoz & Michal Kowalczyk

Matteo Rizzi, Jean Dolbeault, Oscar Jarrín | CMM 7th floor

A&C Random graphs and limits / Organizer: Maya Stein

Dieter Mitsche, Hiêp Hàn | DIM 5th floor

NPDE Numerical Analysis II / Organizers: David Mora, Manuel Solano, Mauricio Sepúlveda

Manuel Sanchéz, David Mora, Mauricio Sepúlveda | CMM 6th floor

Parallel Sessions Th1, 11:00-12:30

SPET | Stochastic Modeling and Data Science / Organizers: Felipe Tobar & Joaquín Fontbona

Elsa Cazelles, Claire Delplancke, Pablo Groisman | Open Space

OPT | Controlled biological dynamical systems / Organizers: Pedro Gajardo & Héctor Ramírez

Alain Rapaport, Olga Vasilieva, Diego Vicencio | D'Etigny

MMIP | Inverse problems I / Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega

François Murat, Sergio Gutiérrez, Nicolás Lebbe | B04

PDE | PDE II / Organizer: Mircea Petrache

Jacek Jendrej, Simona Rota-Nodari, Sergio Gutierrez, | CMM 7th floor

A&C | Structural graph theory / Organizer: Maya Stein

Fábio Botler, Daniel Quiroz, César Hernández-Cruz | DIM 5th floor

NPDE | Numerical Analysis III / Organizers: David Mora, Manuel Solano, Mauricio Sepúlveda

Ignacio Muga, Alexandre Ern, Thomas Führer | CMM 6th floor

BIO | Controlled biological dynamical systems / Organizers: Pedro Gajardo & Héctor Ramírez

Alain Rapaport, Olga Vasilieva, Diego Vicencio | D'Etigny

Parallel Sessions Th2, 14:00-16:00

SPET | Random models in mathematical physics / Organizer: Daniel Remenik

Gregorio Moreno, Tertuliano Franco, Avelio Sepulveda | Open Space

OPT | Combinatorial optimization / Organizer: José Verschae

Andreas Wiese, Diego Morán, Gonzalo Muñoz | D'Etigny

MMIP | Inverse problems II / Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega

Rodrigo Lecaros, Gino Montesinos, Joaquín Mura | B04

PDE | PDE II / Organizer: Mircea Petrache

Diego Paredes, Cristobal Guzmán, Rodolfo Viera | CMM 7th floor

A&C | Extremal graph theory and coloring / Organizer: Maya Stein

Carlos Hoppen, Guilherme Mota, Kolja Knauer | DIM 5th floor

NPDE | Numerical Analysis IV / Organizers: David Mora, Manuel Solano, Mauricio Sepúlveda

Carlos Pérez, Paulina Sepúlveda, Noureddine Igbida | CMM 6th floor

BIO | Mathematical modeling for natural resources and cancer progression / Organizers: Alejandro Maass & Héctor Ramírez

Karina Vilchez, Héctor Oliveros, Gérard Olivar | DIM 4th floor

Parallel Sessions F1, 11:00-12:30

SPET
Stochastic analysis / Organizer: Joaquín Fontbona

Jaime San Martín, Victor Rivero, Antoine Brault — Open Space

OPT
New results on support vector machines and conic programming / Organizer: Héctor Ramírez

Paulo Silva, Julio López, Gabriel Haeser — D'Etigny

PDE
PDE III / Organizer: Erwin Topp

Juan Carlos Pozo, Alexander Quaas — CMM 7th floor

Parallel Sessions F2, 14:00-16:00

SPET
Ergodic theory and dynamical systems II / Organizer: Alejandro Maass

Paulina Cecchi, Sebastián Donoso, María Isabel Cortez — Open Space

OPT
New trends in algorithmics and learning / Organizers: Mario Bravo & Héctor Ramírez

Mikhael Solodov, Roberto Andreani, Sylvain Sorin — D'Etigny

PDE
PDE III / Organizer: Erwin Topp

Gonzalo Dávila, Julián Fernández, Julio Rossi — CMM 7th floor

Workshops (Parallel sessions)

SPET | Stochastic Processes and Ergodic Theory

Chair: Joaquín Fontbona

Wednesday, Nov 6th

Parallel session W1: Scaling limits of random processes and structures			
Organizers:	Joaquín Fontbona		
Chair:	Joaquín Fontbona		
11:00-11:30	Thierry Huillet	U. Cergy-Pontoise, France	Scaling features of two Markov chains with total disasters
11:30-12:00	Jean-Stephane Dhersin	CNRS, France	Cost functionals for large random trees
12:00-12:30	Hagop Tossounian	UCH, Chile	Kac's Model with thermostats and rescaling

Parallel session W2: Ergodic Theory and Dynamical Systems I			
Organizers:	Sebastián Donoso		
Chair:	Sebastián Donoso		
14:00-14:30	Jairo Bochi	PUC, Chile	Emergences in Ergodic Theory
14:30-15:00	Yuri Lima	U. Federal do Ceará	Markov partitions and adapted measure
15:00-15:30	Rodolfo Gutiérrez	UCH, Chile	Coding the Teichmüller flow by veering triangulations

SPET | Stochastic Processes and Ergodic Theory

Chair: Joaquín Fontbona

Thursday, Nov 7th

Parallel session Th1: Stochastic modeling and data science			
Organizers:	Felipe Tobar- Joaquín Fontbona		
Chair:	Felipe Tobar		
11:00-11:30	Elsa Cazelles	UCH, Chile	The Wasserstein-Fourier distance for stationary time series
11:30-12:00	Claire Delplancke	UCH, Chile	A scalable stochastic algorithm for passive seismic tomography
12:00-12:30	Pablo Groisman	UBA, Argentina	Nonhomogeneous first passage percolation and manifold learning

Parallel session Th2: Random models in mathematical physics			
Organizers:	Daniel Remenik		
Chair:	Daniel Remenik		
14:00-14:30	Gregorio Moreno	PUC, Chile	Convergence to the Burgers equation: two examples
14:30-15:00	Tertuliano Franco	UFBA, Brazil	The directed edge reinforced random walk: ant mill phenomena
15:00-15:30	Avelio Sepulveda	U. Lyon, France	A survey on level sets of the two-dimensional Gaussian free field

SPET | Stochastic Processes and Ergodic Theory

Chair: Joaquín Fontbona

Friday, Nov 8th

Parallel session F1: Stochastic analysis			
Organizers:	Joaquín Fontbona		
Chair:	TBA		
11:00-11:30	Jaime San Martín	UCH, Chile	Powers of Green Potentials
11:30-12:00	Víctor Rivero	CIMAT, Mexico	Self similar Markov processes conditioned on staying in a cone
12:00-12:30	Antoine Brault	UCH, Chile	Young and rough differential inclusions

Parallel session F2: Ergodic Theory and Dynamical Systems II			
Organizers:	Alejandro Maass		
Chair:	Alejandro Maass		
14:00-14:30	Paulina Cecchi	USACH, Chile	Balance in symbolic systems
14:30-15:00	Sebastián Donoso	UCH, Chile	Characteristic factors and joint ergodicity for commuting transformations and polynomial iterates
15:00-15:30	María Isabel Cortez	USACH, Chile	Minimal aperiodic group actions on the Cantor set

OPT | Optimization

Chair: Héctor Ramírez

Wednesday, Nov 6th

Parallel session W1: Energy Markets			
Organizers:	Tito Homen-de-Mello & Héctor Ramírez		
Chair:	Tito Homen-de-Mello		
11:00-11:30	Alejandro Jofré	UCH, Chile	Strategic behavior and risk analysis for network electricity markets under massive entry of renewal energies
11:30-12:00	Didier Aussel	U. Perpignan, France	Mutli-Leader-Disjoint follower game: genericity and electricity contract problem
12:00-12:30	Alexandre Street	PUC Rio, Brazil	Distributionally Robust Transmission Expansion Planning: a Multi-scale Uncertainty Approach

Parallel session W2: Energy and Optimal control			
Organizers:	Cristopher Hermosilla		
Chair:	Cristopher Hermosilla		
14:00-14:30	Adrian Carrillo-Galvez	U. Concepción, Chile	The Environmental/Economic Dispatch Problem based on Duality Theory
14:30-15:00	Anna Désilles	Ensta Paris Tech, France	Sensitivity relations for some classes of optimal multi-processes
15:00-15:30	Maria Soledad Aronna	F. Getulio Vargas, Brazil	Optimality Conditions for the Control of Fokker-Planck Equations

OPT | Optimization

Chair: Héctor Ramírez

Thursday, Nov 7th

Parallel session Th1: Optimization meets biomathematics – Controlled Biological Dynamical Systems			
Organizers:	Héctor Ramírez & Pedro Gajardo		
Chair:	Pedro Gajardo		
11:00-11:30	Alain Rapaport	MISTEA, France	Weak resilience to invasion in the chemostat model and asymptotically periodic controls
11:30-12:00	Olga Vasilieva	U. del Valle, Colombia	Optimal control approach for implementation of sterile insect techniques
12:00-12:30	Diego Vicencio	USM, Chile	Comparison of viability kernels for generalized monotone controlled systems and applications to biological control

Parallel session Th2: Combinatorial Optimization			
Organizers:	José Verschae		
Chair:	José Verschae		
14:00-14:30	Andreas Wiese	UCH, Chile	Fully Dynamic Approximate Maximum Independent Set in Interval and Geometric Intersection Graphs
14:30-15:00	Diego Morán	UAI, Chile	Subadditive Duality for Conic Mixed-Integer Programs
15:00-15:30	Gonzalo Muñoz	UOH, Chile	Intersection cuts for polynomial optimization

OPT | Optimization

Chair: Héctor Ramírez

Friday, Nov 8th

Parallel session F1: New results on support vector machines and conic programming			
Organizers:	Héctor Ramírez		
Chair:	Héctor Ramírez		
11:00-11:30	Paulo Silva	U. Campinas, Brazil	Robust nonlinear support vector machine based on difference of convex functions
11:30-12:00	Julio López	UDP, Chile	A New formulation for support vector regression based on second-order cone programming
12:00-12:30	Gabriel Haeser	U Sao Paulo, Brazil	Optimality conditions for nonlinear symmetric cone programming

Parallel session F2: New trends in algorithmics and learning			
Organizers:	Mario Bravo & Héctor Ramírez		
Chair:	Mario Bravo		
14:00-14:30	Mikhael Solodov	IMPA, Brazil	Some news on the convergence and the cost of iterations of augmented Lagrangian methods
14:30-15:00	Roberto Andreani	U. Campinas, Brazil	Sequential conditions of optimality theoretical and practical importance
15:00-15:30	Sylvain Sorin	U. Sorbonne, France	No-regret criteria in learning, games and convex optimization

MMIP | Mathematical Mechanics and Inverse Problems

Chair: Axel Osses

Wednesday, Nov 6th

Parallel session W1: Control and Inverse Problems in PDE's Session 1			
Organizers:	Eduardo Cerpa, Carlos Conca, Jaime Ortega		
Chair:	Jaime Ortega		
11:00-11:30	Sebastián Zamorano	Universidad de Santiago de Chile, Chile	Null controllability from the exterior of a one-dimensional nonlocal heat equation
11:30-12:00	Charles Dapogny	Université de Grenoble-Alpes, France	TBA
12:00-12:30	Cristhian Montoya	Universidad Técnica Federico Santa María, Chile	Simultaneous robust control and hierarchic control in some PDEs

Parallel session W2: Control and Inverse Problems in PDE's Session 2			
Organizers:	Eduardo Cerpa, Carlos Conca, Jaime Ortega		
Chair:	Eduardo Cerpa		
14:00-14:30	Exequiel Mallea	Universidad de Tarapacá, Chile	A regularity criterion for a 3D chemo-repulsion system and its application to a bilinear optimal control problem
14:30-15:00	Roberto Morales	Universidad de Chile, Chile	On the controllability of some PDE's with dynamic boundary conditions
15:00-15:30	Nicolás Carreño	Universidad Técnica Federico Santa María, Chile	Boundary null-controllability of a system coupling fourth- and second-order parabolic equations

MMIP | Mathematical Mechanics and Inverse Problems

Chair: Axel Osses

Thursday, Nov 7th

Parallel session Th1: Control and Inverse Problems in PDE's Session 3			
Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega			
Chair: Carlos Conca			
11:00-11:30	Francois Murat	Sorbonne Université and CNRS, France	Homogenization of the Neumann's brush problem
11:30-12:00	Sergio Gutiérrez	Pontificia Universidad Católica de Chile, Chile	TBA
12:00-12:30	Nicolas Lebbe	Université de Grenoble-Alpes, France	TBA

Parallel session Th2: Control and Inverse Problems in PDE's Session 4			
Organizers: Eduardo Cerpa, Carlos Conca, Jaime Ortega			
Chair: Axel Osses			
14:00-14:30	Rodrigo Lecaros	Universidad Técnica Federico Santa María, Chile	An inverse problem for Moore–Gibson–Thompson equation arising in high intensity ultrasound
14:30-15:00	Gino Montesinos	Universidad de Aysén, Chile	TBA
15:00-15:30	Joaquín Mura	Universidad Técnica Federico Santa María, Chile	On two Inverse Problems in biomechanics

PDE | Partial Differential Equations

Chairs: Claudio Muñoz & Michal Kowalczyk

Partial Differential Equations Session			
30 mins each	**Wed 6**	**Th 7**	**Fr 8**
Coffee break			
11:00-11:30	Van den Bosch	Jendrej	Pozo
11:30-12:00	Roman	Rota-Nodari	Quaas
12:00-12:30	Goubet	Gutiérrez	
Lunch			
14:00-14:30	Rizzi	Paredes	Dávila
14:30-15:00	Dolbeault	Guzmán	Fernández
15:00-15:30	Jarrin	Viera	Rossi

EDP1	EDP2	EDP3
Kowalczyk/Muñoz	Mircea Petrache	Erwin Topp
Jean Dolbeault	Sergio Gutiérrez	Gonzalo Dávila
Olivier Goubet	Cristobal Guzmán	Julián Fernández
Oscar Jarrín	Diego Paredes	Juan Carlos Pozo
Jacek Jendrej	Simona Rota-Nodari	Alex Quaas
Matteo Rizzi	Rodolfo Viera	Julio Rossi
Carlos Román		
Hanne van den Bosh		

PDE | Partial Differential Equations

Chairs: Claudio Muñoz & Michal Kowalczyk

EDP1	Title of the talk
Jean Dolbeault	Hypocoercivity and functional inequalities
Olivier Goubet	Mathematical modelling for complex forest ecosystems
Oscar Jarrín	On decay properties and asymptotic behavior of solutions to a non-local perturbed KdV equation.
Jacek Jendrej	Dynamics of bubbling wave maps with prescribed radiation
Matteo Rizzi	Some solutions to the Cahn-Hilliard equation and constant mean curvature surfaces
Carlos Román	On the 3D Ginzburg-Landau model of superconductivity
Hanne van den Bosh	Optimizers for a Poincaré-Sobolev inequality

EDP2	Title of the talk
Sergio Gutiérrez	Optimal design under uncertainty using Small Amplitude Homogenization
Cristobal Guzmán	Lower Bounds for Parallel and Randomized Convex Optimization
Diego Paredes	New advances on multiscale hybrid-mixed methods
Simona Rota-Nodari	Uniqueness and non-degeneracy for a class of semilinear elliptic equations
Rodolfo Viera	On an equation involving the Jacobian and Delone sets

EDP3	Title of the talk
Gonzalo Dávila	TBA
Julián Fernández	Gamma convergence and asymptotic behavior for eigenvalues of nonlocal problems
Juan Carlos Pozo	A non-local in time telegraph equation
Alex Quaas	The sharp exponent in the study of the nonlocal Hénon equation in Rn. A Liouville theorem and an existence result.
Julio Rossi	The evolution problem associated with eigenvalues of the Hessian

A&C | Algorithms and Combinatorics

Chair: Maya Stein

Wednesday, Nov 6th

Parallel session W1: Graph classes and Algorithms			
Organizer:	Maya Stein		
Chair:	Maya Stein		
11:00-11:30	Gelasio Salazar	U. Aut. San Luis Potosi, México	Knots and shadows: applications of graph theory to knot theory
11:30-12:00	Cristina Fernandes	USP, Brazil	A new approximation for Maximum Leaf Spanning Arborescence on directed acyclic graphs
12:00-12:30	Mario Valencia-Pabón	Paris 1, France	Hom-idempotent graphs, normal Cayley graphs and k-tuple coloring of graphs

Parallel session W2: Random graphs and limits			
Organizer:	Maya Stein		
14:00-14:30	Dieter Mitsche	U. Nice, France	k-regular subgraphs near the k-core threshold of a random graph
14:30-15:00	Hiep Hàn	USACH, Chile	Quasi-random words and limits of word sequences

A&C | Algorithms and Combinatorics

Chair: Maya Stein

Thursday, Nov 7th

Parallel session W3: Structural graph theory			
Organizer:	Maya Stein		
Chair:	TBA		
11:00–11:30	Fábio Botler	UFRJ, Brazil	Further on Gallai's path decomposition conjecture
11:00–12:00	Daniel Quiroz	UCH, Chile	Clique immersions and independence number
12:00–12:30	César Hernandez-Cruz	CINESTAV, México	Strongly chordal digraphs

Parallel session W4: Extremal graph theory and colouring			
Organizer:	Maya Stein		
Chair:	TBA		
14:00–14:30	Carlos Hoppen	UFRGS, Brazil	The Erdös-Rothschild problem and generalizations
14:30–15:00	Guilherme Mota	UFABC, Brazil	The size-Ramsey number of 3-uniform tight paths
15:00–15:30	Kolja Knauer	U. Aix-Marseille, France	Complete acyclic colorings

NPDE | Numerical Methods for Partial Differential Equations

Chair: Mauricio Sepúlveda

Wednesday, Nov 6th

Parallel session W1: NA1			
Organizers:	David Mora, Manuel Solano & Mauricio Sepúlveda		
Chair:	Manuel Sánchez		
11:00-11:30	Pablo Venegas	UBB, Chile	Numerical analysis of a time-domain elastoacoustic problem
11:30-12:00	Michael Karkulik	UTFSM, Chile	Space-time least squares finite elements for parabolic equations and applications
12:00-12:30	Rodolfo Araya	U. Concepción, Chile	An a posteriori error estimator for MHM Method

Parallel session W2: NA2			
Organizers:	David Mora, Manuel Solano & Mauricio Sepúlveda		
Chair:	Norbert Heuer		
14:00-14:30	Manuel Sánchez	PUC, Chile	Symplectic Hybridizable discontinuous Galerkin methods for wave propagation problems
14:30-15:00	David Mora	UBB, Chile	Virtual Element for the Vibration Problem of Kirchhoff Plates
15:00-15:30	Mauricio Sepúlveda	U. Concepción, Chile	Stability analysis of the numerical method for damping dispersive equations

NPDE | Numerical Methods for Partial Differential Equations

Chair: Mauricio Sepúlveda

Thursday, Nov 7th

Parallel session Th1: NA3			
Organizers:	David Mora, Manuel Solano & Mauricio Sepúlveda		
Chair:	Rodolfo Araya		
11:00-11:30	Ignacio Muga	PUCV, Chile	A DG-based stabilized residual minimization technique
11:30-12:00	Alexandre Ern	ENPC & INRIA, Paris, France	A Hybrid High-Order discretization combined with Nitsche's method for contact and Tresca friction in small strain elasticity
12:00-12:30	Thomas Führer	PUC, Chile	A least-squares finite element method for the obstacle problem

Parallel session Th2: NA4			
Organizers:	David Mora, Manuel Solano & Mauricio Sepúlveda		
Chair:	Mauricio Sepúlveda		
14:00-14:30	Carlos Perez	PUC, Chile	Density Interpolation Methods
14:30-15:00	Paulina Sepúlveda	PUCV, Chile	Two adaptive discontinuous space-time methods for the wave equation
15:00-15:30	Noureddine Igbida	U. Limoge, France	Augmented Lagrangian method for Hamilton Jacobi equation

BIO | Biomathematics

Chairs: Alejandro Maass & Héctor Ramírez

Thursday, Nov 7th

Parallel session Th1: Optimization meets biomathematics - Controlled Biological Dynamical Systems			
Organizers:	Héctor Ramírez & Pedro Gajardo		
Chair:	Pedro Gajardo		
Room:	D'Etigny		
11:00-11:30	Alain Rapaport	MISTEA, Montpellier, France	Weak resilience to invasion in the chemostat model and asymptotically periodic controls
11:30-12:00	Olga Vasilieva	U. del Valle, Colombia	Optimal control approach for implementation of sterile insect techniques
12:00-12:30	Diego Vicencio	USM, Chile	Viability Kernels in Monotone Controlled Dynamical Systems and Ecological Applications

Parallel session Th2: Mathematical modeling for natural resources and cancer progression			
Organizers:	Héctor Ramírez & Alejandro Maass		
Chair:	Alain Rapaport		
Room:	Seminar room 4th floor		
14:00-14:30	Karina Vilchez	UC Maule, Chile	Emergent behaviors in multi-cellular tumor progression including micro-environmental interactions
14:30-15:00	Héctor Olivero	U. Valparaiso, Chile	Synchronization and propagation of chaos for mean field networks of Hodgkin-Huxley neurons with noisy channels
15:00-15:30	Gerard Olivar	U. Aysen, Chile	Convenient growth of renewable resources for stability of sustainable development

http://eventos.cmm.uchile.cl/flacam2019

Contact us: flacam2019@cmm.uchile.cl