LAGOS 2025

XIII Latin American Algorithms, Graphs, and Optimization Symposium

November 10–14, 2025
Buenos Aires, Argentina

General Schedule

	Monday November 10		Tuesday November 11		Wednesday November 12		Thursday November 13		Friday November 14
08:00	Registration	08:00	Registration						
		09:00	Mitre Dourado (Room 1401)	09:00	Flavia Bonomo-Braberman (Room 1401)	09:00	Ana Silva (Room 1401)	09:00	Zoran Stanić (Room 1401)
09:15	Opening								
09:30	Martin Milanič (Room 1401)								
		10:00	Tribute to Fábio Protti (1401)	10:00	Tribute to Guillermo Durán (1401)	10:00	Tribute to Cláudia L. Sales (1401)	10:00	Break
10:30	Break	10:30	Break	10:30	Break	10:30	Break	10:10	Contributed Talks 28 (Room 1401) 29 (Room 1402) 30 (Room 1403)
10:40	Contributed Talks 1 (Room 1401) 2 (Room 1402) 3 (Room 1403)	10:40	Contributed Talks 10 (Room 1401) 11 (Room 1402) 12 (Room 1308)	10:40	Contributed Talks 16 (Room 1401) 17 (Room 1402) 18 (Room 1403)	10:40	Contributed Talks 19 (Room 1401) 20 (Room 1402) 21 (Room 1308)		
11:30	Coffee break	11:30	Coffee break	11:30	Coffee break	11:30	Coffee break	11:25	Coffee break
12:00	Contributed Talks 4 (Room 1401) 5 (Room 1402) 6 (Room 1403)	12:00	Contributed Talks 13 (Room 1401) 14 (Room 1402) 15 (Room 1308)	12:00	Sebastián Ceria (Room 1401)	12:00	Contributed Talks 22 (Room 1401) 23 (Room 1402) 24 (Room 1308)	11:50	Irena Penev (Room 1401)
				12:45	Rafael Epstein (Room 1401)				
12:50	Break	12:50	Break			12:50	Break	12:50	Closing
				14:30	Excursion				
15:00	Martine Labbé (Room 1401)	15:00	Mariana Escalante (Room 1401)			15:00	Bruce Reed (Room 1401)		
16:00	Coffee break	16:00	Coffee break			16:00	Group Photo and coffee break		
16:30	Contributed Talks 7 (Room 1401) 8 (Room 1402) 9 (Room 1403)	16:30	Mario Guajardo (Room 1401)			16:30	Contributed Talks 25 (Room 1401) 26 (Room 1402) 27 (Room 1403)		
				21:00	Dinner				

LAGOS 2025 Program

Monday, November 10

08:00-09:00 **Registration**

09:15-09:30 **Opening**

09:30-10:30 **Plenary Talk 1** | Room 1401 | Chair: Martín Safe

Martin Milanič
Inverting Ramsey: awesome graph parameters

10:30-10:40 **Break**

10:40-11:30 **Contributed Talks 1** | Room 1401 | Chair: André Luiz Pires Guedes

Trees with proper thinness 2
by *Flavia Bonomo-Braberman, Ignacio Maqueda* and Nina Pardal*

Inclusion graphs of biclique parts of K_3-free graphs
by *Edmilson Pereira da Cruz, Marina Groshaus and André Luiz Pires Guedes**

Contributed Talks 2 | Room 1402 | Chair: Mauro Nigro

Short cycle covers and the colouring defect of a cubic graph
by *Ján Karabáš, Edita Máčajová*, Roman Nedela and Martin Škoviera*

Strong conformable coloring: the conformable coloring for Type 1 graphs
by *Luerbio Faria, Mauro Nigro* and Diana Sasaki*

Contributed Talks 3 | Room 1403 | Chair: Henry Echeverría

Realizable signatures in upward pointset embeddings of directed paths
by *Manuel A. Espinosa-García, Miguel Raggi* and Edgardo Roldán-Pensado*

A polynomial-time algorithm recognizing exact cubes of trees
by *Laurent Beaudou, Henry Echeverría*, Florent Foucaud, Andrea Jiménez, Nikita Manuylenko and Anirudh Rachuri*

11:30-12:00 **Coffee break**

12:00-12:50 **Contributed Talks 4** | Room 1401 | Chair: Henry Echeverría

Stretching Operations Applied to Cliques of Edge Intersection Graphs of Paths in Trees
by *Mariana Escalante, Victoria Kaial* and Annegret Wagler*

On complete immersions and topological bounds

by *Henry Echeverría*⋆*, Andrea Jiménez, Suchismita Mishra, Adrián Pastine, Daniel Quiroz and Mauricio Yépez*

Contributed Talks 5 | Room 1402 | Chair: Martín Safe

Total b-chromatic Colouring of Graphs
by *Fabricio Mendoza Granada*⋆ *and David Manlove*

Contributed Talks 6 | Room 1403 | Chair: Felipe Noronha

Space-Efficient Lyndon Array Construction from Compressed Texts
by *Daniel Saad Nogueira Nunes*⋆*, Felipe Louza and Guilherme Telles*

How to go from partial to full retroactivity in detail
by *Cristina Fernandes and Felipe Noronha*⋆

12:50-15:00 **Lunch**

15:00-16:00 **Plenary Talk 2** | Room 1401 | Chair: Mariana Escalante

Martine Labbé
Solving Chance-Constrained (mixed integer) Linear Optimization Problems with Branch-and-Cut

16:00-16:30 **Coffee break**

16:30-17:45 **Contributed Talks 7** | Room 1401 | Chair: Fernando Esteban Contreras-Mendoza

Diameter constraints in 2-distance graphs
by *Oleksiy Al-saadi*⋆ *and Joseph Natal*

Totally odd immersions of complete graphs in graph products
by *Henry Echeverría*⋆*, Andrea Jiménez, Suchismita Mishra, Daniel Quiroz and Mauricio Yépez*

Partitioning P_5-free graphs into an independent set and a complete multipartite graph
by *Germán Benítez-Bobadilla, Fernando Esteban Contreras-Mendoza*⋆*, Juan Carlos García-Altamirano, César Hernández-Cruz and Juan José Montellano-Ballesteros*

Contributed Talks 8 | Room 1402 | Chair: Nicolas Nisse

Type 1 and Type 2 Kochol superposition snarks
by *Rieli Araújo*⋆*, Celina Herrera de Figueiredo, Diana Sasaki and Simone Dantas*

Colouring defect of strong snarks
by *Ján Karabáš*⋆*, Edita Máčajová, Roman Nedela and Martin Škoviera*

The Graph Coloring Game on $4 \times n$-Grids
by *Caroline Brosse, Nicolas Martins, Nicolas Nisse*⋆ *and Rudini Sampaio*

Contributed Talks 9 | Room 1403 | Chair: Natan Figueiredo

Computational aspects of disks enclosing many points
by *Prosenjit Bose, Guillermo Esteban and Tyler Tuttle*⋆

On the 2D Demand Bin Packing Problem: Hardness and Approximation Algorithms

by *Susanne Albers, Waldo Gálvez*★ *and Ömer Behic Özdemir*

On musical arrangement problems time complexity
by *Natan Figueiredo*★*, Luerbio Faria, Vinícius dos Santos and Uéverton Souza*

Tuesday, November 11

08:00-09:00 **Registration**

09:00-10:00 **Plenary Talk 3** | Room 1401 | Chair: Júlio Araújo

Mitre Dourado
Complexity aspects of the hull number in graph convexities

10:00-10:30 **Tribute to Fábio Protti** | Room 1401 | Chair: Mitre Dourado

10:30-10:40 **Break**

10:40-11:30 **Contributed Talks 10** | Room 1401 | Chair: Arthur Correia Gomes

On $\{k\}$-Roman graphs
by *Kenny Bešter Štorgel, Nina Chiarelli, Lara Fernández*★*, J. Pascal Gollin, Claire Hilaire, Valeria Leoni and Martin Milanič*

Minimum-density locating-dominating sets on infinite hexagonal grids with bounded height
by *Arthur Correia Gomes*★ *and Yoshiko Wakabayashi*

Contributed Talks 11 | Room 1402 | Chair: Ignasi Sau

Combinatorial Parameterized Algorithms for Chemical Descriptors based on Molecular Graph Sparsity
by *Giovanna Kobus Conrado, Amir Kafshdar Goharshady*★*, Harshit Jitendra Motwani and Sergei Novozhilov*

A Parameterized Perspective on Uniquely Restricted Matchings
by *Juhi Chaudhary, Ignasi Sau*★ *and Meirav Zehavi*

Contributed Talks 12 | Room 1308 | Chair: Ana Gargantini

A first exploration of the split-interval coloring polytope
by *Diego Delle Donne*★ *and Javier Marenco*

Spectral properties of stellohedra
by *Ana Gargantini*★*, Adrián Pastine, Pablo Torres and Mario Valencia-Pabon*

11:30-12:00 **Coffee break**

12:00-12:50 **Contributed Talks 13** | Room 1401 | Chair: Pablo Romero

Minimum Number of Distinct Eigenvalues of Sunlet Graphs
by *Luiz Emilio Allem, Rodrigo O. Braga, Bruno Scaratti and Lucas Sibemberg*★

Construction of infinitely many trace-minimal graphs with maximum number of spanning trees
by *Pablo Romero*★ *and Louis Petingi*

Contributed Talks 14 | Room 1402 | Chair: Ignasi Sau

Rainbow separating path systems
by *Alexander Clifton, George Kontogeorgiou*⋆*, Taruni Sai Sridhar and Ana Trujillo-Negrete*

Finding subdigraphs in digraphs of bounded directed treewidth
by *Raul Lopes and Ignasi Sau*⋆

Contributed Talks 15 | Room 1308 | Chair: María Gracia Cornet

On total $\{k\}$-domination on caterpillar graphs
by *Mariana Escalante, María Inés Lopez Pujato*⋆ *and Paola Tolomei*

Domination in Johnson graphs
by *María Gracia Cornet*⋆*, Tanja Dravec and Pablo Torres*

12:50-15:00 **Lunch**

15:00-16:00 **Plenary Talk 4** | Room 1401 | Chair: Flavia Bonomo-Braberman

Mariana Escalante
A nice and winding walk through combinatorics

16:00-16:30 **Coffee break**

16:30-17:30 **Plenary Talk 5** | Room 1401 | Chair: Guillermo Durán

Mario Guajardo
Optimization in sports scheduling: Problems and applications

Wednesday, November 12

09:00-10:00 **Plenary Talk 6** | Room 1401 | Chair: Celina Herrera de Figueiredo

Flavia Bonomo-Braberman
Generalized list matrix partition problems on some classes of intersection graphs

10:00-10:30 **Tribute to Guillermo Durán** | Room 1401 | Chair: Javier Marenco

10:30-10:40 **Break**

10:40-11:30 **Contributed Talks 16** | Room 1401 | Chair: César Hernández-Cruz

Graphs whose line graph square is P_k-free
by *Martín Safe and Martina Vergara*⋆

Maya-Tupi graphs: a generalization of split graphs
by *Júlio Araújo, César Hernández-Cruz*⋆ *and Cláudia Linhares Sales*

Contributed Talks 17 | Room 1402 | Chair: Martin Škoviera

Lower Bounds for Induced-Universal Graphs
by *Cyril Gavoille and Amaury Jacques*⋆

Are there any permutation snarks on 6 (mod 8) vertices?
by *Edita Máčajová and Martin Škoviera*⋆

Contributed Talks 18 | Room 1403 | Chair: Guilherme Mota

Universality for degenerate hypergraphs
by *Peter Allen, Julia Böttcher and Jasmin Katz*★

Graphs with asymmetric Ramsey properties
by *Walner Mendonça, Meysam Miralaei and Guilherme Mota*★

11:30-12:00 **Coffee break**

12:00-12:45 **Plenary Talk 7** | Room 1401 | Chair: Mario Guajardo

Sebastián Ceria
AI and Data Science in Football: The case of Racing de Santander

12:45-13:30 **Plenary Talk 8** | Room 1401 | Chair: Mario Guajardo

Rafael Epstein
Combinatorial Problems in Applied Auctions and Market Design Models

14:30-18:30 **Conference Excursion (Tigre-Puerto Madero Boat Tour)**

21:00 **Conference Dinner at *La Escondida* steakhouse**

Thursday, November 13

09:00-10:00 **Plenary Talk 9** | Room 1401 | Chair: Fábio Protti

Ana Silva
From Graphs to Temporal Graphs and Back

10:00-10:30 **Tribute to Cláudia Linhares Sales** | Room 1401 | Chair: Ana Silva

10:30-10:40 **Break**

10:40-11:30 **Contributed Talks 19** | Room 1401 | Chair: Miguel Pizaña

Perfect versus imperfect matching covers of cubic graphs
by *Robert Lukoťka*★ *and Makuochukwu Felix Oguagbaka*

New lower bounds for the order of cages
by *Claudia Marlene de la Cruz Torres and Miguel Pizaña*★

Contributed Talks 20 | Room 1402 | Chair: Luerbio Faria

Partitioning problems in concave-round digraphs and tournaments
by *Constanza Gacitúa Fuentes, Nikolas Jara Cádiz, Pablo Opazo Salazar*★*, Nicolás Sanhueza-Matamala and Christopher Thraves Caro*

The oriented chromatic number of a wheel and of the disjoint union of a wheel with a complete graph
by *Erika Morais Martins Coelho, Hebert Coelho, Luerbio Faria*★*, Mateus de Paula Ferreira and Sulamita Klein*

Contributed Talks 21 | Room 1308 | Chair: Mauro Lucci

Generalized Capacitated Vertex Separator Problem: models and algorithms

by *Sergio Anglada, Carmen Galé and Juan José Salazar-González*[★]

Integer linear programs for the power dominating set problem with channel limitation
by *Mauro Lucci*[★]*, Diego Delle Donne and Mariana Escalante*

11:30-12:00 **Coffee break**

12:00-12:50 **Contributed Talks 22** | Room 1401 | Chair: Annegret Wagler

Cops and Robbers on Token Graphs
by *Bruno Amezcua-Osorio, César Hernández-Cruz*[★]*, Seyyed Aliasghar Hosseini, Humberto Lozano-Chávez and Gary MacGillivray*

The Interplay Between Domination and Separation in Graphs
by *Dipayan Chakraborty and Annegret Wagler*[★]

Contributed Talks 23 | Room 1402 | Chair: Júlio Araújo

Game chromatic number of split and threshold graphs
by *Eder Figueiredo*[★] *and Vinícius dos Santos*

Backbone colouring of chordal graphs
by *Júlio Araújo*[★]*, Nicolas Nisse and Lucas Picasarri-Arrieta*

Contributed Talks 24 | Room 1308 | Chair: Javier Marenco

A solution approach to districting modification and route optimization in waste collection
by *Camilo D'Aloisio, Guillermo Durán and Nazareno Faillace Mullen*[★]

A polyhedral study of the berth allocation problem with tides
by *Javier Marenco*

12:50-15:00 **Lunch**

15:00-16:00 **Plenary Talk 10** | Room 1401 | Chair: Martine Labbé

Bruce Reed
The Erdős-Sós Conjecture and Some (Minor) Variants

16:00-16:30 **Group Photo** and **coffee break**

16:30-17:45 **Contributed Talks 25** | Room 1401 | Chair: Vinícius dos Santos

Vertex-separating path systems in trees
by *Milene Gutiérrez*[★]*, Nicolás Sanhueza-Matamala and Christopher Thraves Caro*

Separating edges by linearly many subdivisions
by *George Kontogeorgiou*[★]*, Matías Pavez-Signé, Maya Stein, Taruni Sai Sridhar and Ana Trujillo-Negrete*

Exploring subgraph complementation to bounded degree graphs
by *Ivo Koch, Nina Pardal and Vinícius dos Santos*[★]

Contributed Talks 26 | Room 1402 | Chair: Guilherme Adamatti Bridi

Constructions of Small Regular Mixed Graphs with Girth 5 and 6

by *Gabriela Araujo-Pardo and Mirabel Mendoza-Cadena**

Acyclic α-diperfect digraphs with stability number two
by *Caroline de Paula Silva***, Cândida Nunes da Silva and Orlando Lee*

A Weight Function Lemma Heuristic for Graph Pebbling
by *Guilherme Adamatti Bridi***, Franklin de Lima Marquezino and Celina Herrera de Figueiredo*

Contributed Talks 27 | Room 1403 | Chair: Pablo Coll

Minimizing breaks in incomplete round-robin tournaments
by *Dominique de Werra, Sebastián Urrutia** *and Lucas Assunção*

An initial polyhedral study of the DR-AOV formulation for the routing and spectrum allocation problem
by *Federico Bertero** *and Javier Marenco*

Optimized Routing for Residential Waste Collection in Mixed-Density Areas
by *Pablo Coll** *and Ernesto López*

Friday, November 14

09:00-10:00 **Plenary Talk 11** | Room 1401 | Chair: Luciano Grippo

Zoran Stanić
Strong Regularity of Signed Graphs

10:00-10:10 **Break**

10:10-11:25 **Contributed Talks 28** | Room 1401 | Chair: Giovanne Santos

Most reliable two-terminal graphs with distance constraints
by *Pablo Romero*

k-Sachs-Critical Graphs
by *Daniel Jaume***, Diego Martinez, Cristian Panelo and Kevin Pereyra*

Degree conditions for embedding antidirected trees in digraphs
by *George Kontogeorgiou, Giovanne Santos** *and Maya Stein*

Contributed Talks 29 | Room 1402 | Chair: Laila Melo Vaz Lopes

Recognizing IO-RDV graphs in polynomial time
by *Bruno Marinho and Ana Silva*

Trading Determinism for Time: The k-Reach Problem
by *Ronak Bhadra** *and Raghunath Tewari*

Some complexity results on cycle-convex partitions
by *Guilherme de Castro Mendes Gomes, Laila Melo Vaz Lopes** *and Vinícius dos Santos*

Contributed Talks 30 | Room 1403 | Chair: Dennis Wong

On the structure and diameter of graph associahedra of graphs with a set of

true twins
by *Ana Gargantini, Adrián Pastine and Pablo Torres*[⋆]

Riffle Rank
by *Benjamin Rossman*

Generating a cyclic 3-Gray code for integer partitions with maximum parts in constant amortized time
by *Jiahui Shao, Dennis Wong*[⋆]*, Ruizhe Zhou and Wei Ke*

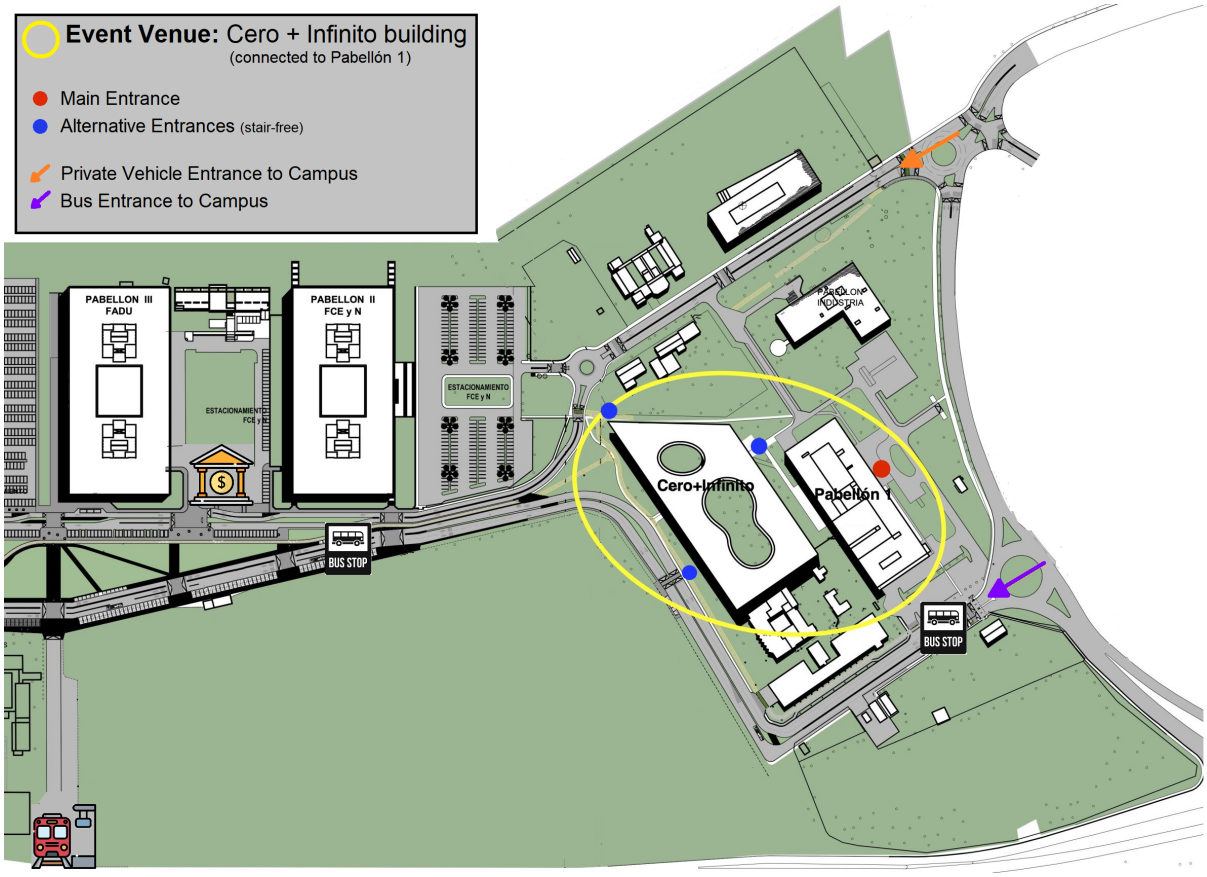
11:25-11:50 **Coffee break**

11:50-12:50 **Plenary Talk 12** | Room 1401 | Chair: Martin Milanič

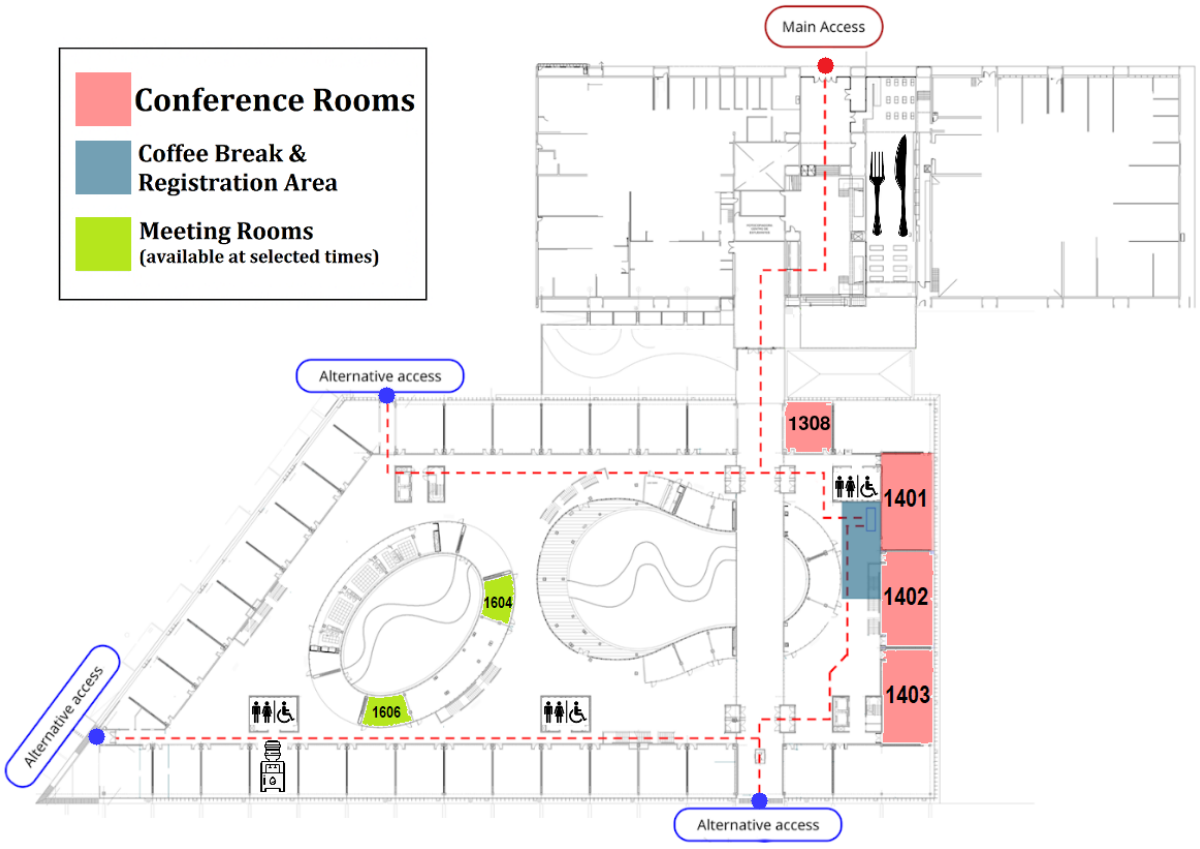
Irena Penev
The class of $(2P_3, C_4, C_6)$-free graphs

12:50-13:00 **Closing**

Maps of the event venue



Pabellón Cero + Infinito



Plenary Talks

Flavia Bonomo-Braberman

Universidad de Buenos Aires, Argentina

Generalized list matrix partition problems on some classes of intersection graphs

Graph k-coloring and k-clique cover are examples of partition problems in graphs, in the first case into k independent sets, in the second case into k cliques. Moreover, maximum clique and maximum independent set are examples of partition problems into two sets, one arbitrary and the other one required to be a clique (resp. independent set), with the addition of a linear objective function to maximize. These are examples of matrix partition problems. For each symmetric matrix M over $\{0,1,*\}$, the M-partition problem seeks a partition of the input graph into independent sets, cliques, or arbitrary sets, with certain pairs of sets being required to have no edges joining them, or to have all edges joining them, as encoded in the matrix. Moreover, the vertices of the input graph can be equipped with lists, restricting the parts to which a vertex can be placed. Even if the first four problems (k-coloring, k-clique cover, maximum clique and maximum independent set) are polynomially solvable on chordal graphs, Feder, Hell, Klein, Nogueira and Protti in 2005 proved that there are M-partition problems that, even without lists or objective functions, remain NP-complete for chordal graphs. Valadkhan in 2019 showed that list M-partition problems are in XP on interval graphs and circular-arc graphs (parameterized by the problem parameters), and for co-comparability graphs parameterized by their clique number plus the problem parameters, among other results. In this talk, we will show how to solve generalized list matrix partition problems (with linear objective functions and further set cardinality restrictions) for graph families defined by bounding certain graph width parameters. As a consequence, we will show that such problems are in XP on interval graphs and proper circular-arc graphs (parameterized by the problem parameters), for co-comparability graphs parameterized by their clique number plus the problem parameters, and on chordal graphs parameterized by their leafage plus the problem parameters. (The leafage of a chordal graph is the minimum number of leaves in a tree such that the graph can be realized as an intersection graph of subtrees of that tree.)

These results are from joint works with several co-authors, including Diego De Estrada, Sara Mattia, Gianpaolo Oriolo, Nick Brettell, Andrea Munaro and Daniël Paulusma.

Sebastián Ceria

Fundar, Argentina and Real Racing Club de Santander, Spain

AI and Data Science in Football: The case of Racing de Santander

This talk presents the integration of AI and Data Science within the daily operations of Real

Racing Club de Santander in Spanish Football second division, showcasing how advanced analytics can enhance tactical understanding, player performance, and strategic decision-making across a professional football organization. By combining event and tracking data, machine learning models, and interactive visualization tools, Racing Santander has developed a comprehensive analytical ecosystem that supports both on-field performance analysis (e.g., teams playing styles, players decision making, set-piece optimization) and off-field processes such as player recruitment, workload monitoring and injury prevention. The case highlights the transformative role of data-driven methodologies in modern football, illustrating how AI-based insights can be operationalized to bridge the gap between data science research and applied performance practice within a professional club environment.

Mitre Dourado

Universidade Federal do Rio de Janeiro, Brazil

Complexity aspects of the hull number in graph convexities

Given a graph G and a family of paths $\mathcal{P}$ of G, we say that $S \subseteq V(G)$ is $\mathcal{P}$-convex if every path of $\mathcal{P}$ joining two vertices of S is a subgraph of $G[S]$. The $\mathcal{P}$-convex hull of S is the minimum $\mathcal{P}$-convex set containing S and S is said to be a $\mathcal{P}$-hull set if its $\mathcal{P}$-convex hull is $V(G)$. The $\mathcal{P}$-hull number of G is the cardinality of a minimum $\mathcal{P}$-hull set of G. We will survey the computational complexity results of the hull number in the well-studied graph convexities.

Rafael Epstein

Universidad de Chile, Chile

Combinatorial Problems in Applied Auctions and Market Design Models

This work presents a series of applied studies with tangible impact in the field of Auctions and Market Design, with a primary focus on Chile and extensions to Argentina. The applications cover education, food provision, pension systems, radio spectrum allocation, and internet services. Each case emphasizes the underlying combinatorial structures, the benefits of adopting such approaches, the challenges of addressing complex instances, and the practical impact achieved.

Mariana Escalante

Universidad Nacional de Rosario, Argentina

A nice and winding walk through combinatorics

Combinatorics is significantly enhanced by the contributions of diverse and rich techniques borrowed from various mathematical fields. Historically, polyhedra, graphs, matrices, integer and linear programming, and properties such as the perfection of graphs and the idealness of matrices combine in elegant results of many delicious flavors. This talk aims to present some results that show how these diverse concepts helped us tackle different integer programming problems. Specifically, the perfection of clique node matrices and the polyhedral property called persistency.

Mario Guajardo
NHH Norwegian School of Economics, Norway

Optimization in sports scheduling: Problems and applications

A main problem in the organization of sports leagues is to define a schedule of games. This involves decisions on when and where the teams should meet to play against each other. The problem is challenging because many conditions must be taken into account on behalf of different stakeholders, such as league officials, players, television broadcasters, and fans. Some examples of these conditions include stadium availability, travel distances, home and away sequences on consecutive games, fairness, and tournament attractiveness. The progress of optimization methods, graph theory and computational resources have made possible to schedule sport competitions in a more efficient way than simple manual or random approaches. This talk will give an overview on sports scheduling, referring to the main problems and criteria considered in the literature and illustrating with real-world cases how the application of optimization models has helped decision makers to schedule football leagues.

Martine Labbé
Université Libre de Bruxelles, Belgium

Solving Chance-Constrained (mixed integer) Linear Optimization Problems with Branch-and-Cut

We consider chance-constrained optimization problems (CCOPs), where constraints with random coefficients must hold with probability above a given threshold. Such problems arise frequently in energy applications and are NP-hard. In the linear case with random data of finite support, CCOPs can be reformulated as mixed-integer linear programs using big-M constants.

We propose a Branch-and-Cut algorithm for linear CCOPs, introducing new valid inequalities and analyzing their closures. Theoretical and computational results demonstrate the strength of these inequalities compared to existing ones, confirming the effectiveness of the proposed approach.

This is a joint work with Diego Cattaruzza, Matteo Petris, Marius Roland and Martin Schmidt.

Martin Milanič
University of Primorska, Slovenia

Inverting Ramsey: awesome graph parameters

We investigate connections between two lines of research related to independent sets and cliques in graphs. One of them studies independence variants of graph parameters such as treewidth or degeneracy. The second line deals with graph classes where some parameters are bounded by a function of the clique number. A famous example is given by the family of χ-bounded graph classes, where the chromatic number is bounded by a function of the clique number.

A Ramsey-type argument implies that a graph parameter is bounded by a function of the clique number in any graph class in which the independence variant of the parameter is bounded by a constant. If the reverse implication also holds, we say that the parameter is *awesome*; otherwise, it is *awful*. We identify a number of awesome and awful graph parameters, derive some algorithmic applications of awesomeness, and propose a number of open problems re-

lated to these notions.

This is joint work with Kenny Bešter Štorgel (FIŠ Novo mesto and Primorska), Clément Dallard (Fribourg), Vadim Lozin (Warwick), and Viktor Zamaraev (Liverpool).

Irena Penev

Charles University, Czech Republic

The class of $(2P_3, C_4, C_6)$-free graphs

A class of graphs is *hereditary* if it is closed under induced subgraphs. For a family of graphs $\mathcal{F}$, a graph G is *$\mathcal{F}$-free* if no induced subgraph of G is isomorphic to any graph in $\mathcal{F}$. A *hole* is an induced cycle of length at least four, and it is *even* or *odd* depending on the parity of its length.

In this talk, I will discuss decomposition theorems for several hereditary classes of graphs, as well as some algorithmic applications of these theorems. I will place special emphasis on a recent decomposition theorem for $(2P_3, C_4, C_6)$-free graphs, i.e. $(2P_3, \text{even hole})$-free graphs, and on a coloring algorithm for this class. I will highlight the role of Truemper configurations (thetas, pyramids, prisms, and wheels) in obtaining decomposition theorems for this and various related classes.

Bruce Reed

Academia Sinica, Taiwan

The Erdős-Sós Conjecture and Some (Minor) Variants

Determining the minimal number of edges in a graph with n vertices which ensures that it contains some fixed graph H as a subgraph is a fundamental question in extremal combinatorics. In 1962, Erdős and Sós conjectured that every graph on n vertices with more than $\frac{n(k-2)}{2}$ edges contains every tree H with k vertices as a subgraph. This is best possible as is shown by the clique on $k-1$ vertices. We present results on this conjecture and some variants, including that obtained by replacing subgraph by minor in its statement. We discuss joint work with Gwenael Joret, Natasha Morrison, Jon Noel, Alex Scott, Maya Stein, David Wood, and Hehui Wu.

Ana Silva

Università degli Studi di Firenze, Italy and Universidade Federal do Ceará, Brazil

From Graphs to Temporal Graphs and Back

A temporal graph is a pair (G, L) where G is a simple graph and L is a function that attributes to each edge of G a subset of discrete times. Such labeling is regarded as the availability of this edge. It can model, for instance, the bus stops within a city, where the labels from stop A to stop B would tell us when there would be a bus going from A to B. It has been used in practice for many other applications, with particular interest for modelling human real-world contact during the COVID pandemic. In this talk, I will present some problems stemming from Graph Theory that have been adapted to the more general temporal graph model, as well as the other way around. That is, some problems on classic Graph Theory that have appeared from the investigation of temporal graph problems.

Zoran Stanić
University of Belgrade, Serbia

Strong Regularity of Signed Graphs

We introduce the concept of strong regularity for signed graphs, which extends the classical notion of strongly regular graphs by incorporating the effects of edge signs into the combinatorial and spectral framework. Within this setting, every strongly regular graph naturally appears as a special case, corresponding to the all-positive signature. Fundamental properties of strongly regular signed graphs are established, together with construction techniques and relationships to spectral features and structural parameters, including net regularity and walk regularity.

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