Ciencia
y Tecnología

24

**July** 29 - **August** 2

UIMP

Universidad
Internacional
Menéndez Pelayo

ESCUELA

XXIII School of Mathematics
«Lluis Santaló»

# Convex Geometry, Differential Geometry and Harmonic Analysis: Building synergies

Cursos de verano **Santander**

## Horario y dirección de contacto

Mañana de L a V: 9.00 a 14.00 h

Santander
Campus de Las Llamas
Avda. de los Castros, 42
39005 Santander
Tlf.: 942 29 87 00

Madrid
C/ de Isaac Peral, 23
28040 Madrid
Tlf.: 91 592 06 31 / 33

## A partir del 17 de junio

Mañana de L a V: 9.00 a 14.00 h
Tarde de L a J: 15.30 a 18.00 h

Santander
Palacio de la Magdalena
39005 Santander
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Colaboración

FUNDACIÓN RAMÓN ARECES

Este curso es susceptible de ser reconocido como formación permanente del profesorado para el personal docente de los centros que imparten las enseñanzas reguladas en la Ley Orgánica 2/2006, de Educación, en base al artículo 21 y 29 de la Orden EDU/2886/2011, de 20 de octubre, por la que se regula la convocatoria, reconocimiento, certificación y registro de las actividades de formación permanente del profesorado.

Código 65PT - ECTS: 2,5

## Directors

María de los Ángeles Alfonseca Cubero
Profesora en North Dakota State University

Eugenia Saorín Gómez
Universidad de Bremen

## Organization

Dmitry Ryabogin
Kent State Universitu, USA

The School «Lluís Santaló» is organized yearly as part of the summer courses at the Universidad Internacional Menéndez Pelayo, in Santander, by the Real Sociedad Matemática Española. This School is aimed mainly to master and Ph.D students.
The 2024 School is titled “Convex Geometry, Diffential Geometry and Harmonic Analysis: Building Synergies". Its goal is to emphasize and promote the connections among three main areas of mathematics: convex geometry, differential geometry, and harmonic analysis. Its program consists of three mini courses delivered by Alina Stancu (Concordia University, Montreal), Semyon Alesker (Universidad de Tel Aviv) and Vladyslav Yaskin (University of Alberta).
Yaskin’s course will showcase how classical operators in harmonic analysis (such as the Hilbert, Radon and cosine transforms) can be instrumental in proving uniqueness results for convex bodies if certain information about their sections and projections is known. The topic of Stancu’s course is the determination of convex bodies with a prescribed Gauss curvature, using elliptic equations of Monge-Ampère type, and curvature flows for parabolic equations. Finally, Alesker’s course will focus on the study of the space of valuations (finitely additive measures) defined on the set of convex bodies, and on the application of the convolution and Fourier type transforms to solve problems such as Kotrbat’s conjecture, and to prove new geometric inequalities.
In addition, several 40 and 50 minute talks will complement the main topics of the School, and there will be an opportunity for younger participants to showcase their work during the poster session.

**Apertura matrícula**
Desde el día 8 de abril de 2024
(plazas limitadas)

Solicitud
online

## Lunes 29 de julio

09.30 h Opening

10.00 h Applications of partial differential equations to convex geometry I
**Alina Stancu**
Concordia University

11.30 h Harmonic Analysis Methods in Geometric Tomography I
**Vladyslav Yaskin**
University of Alberta

12.30 h Fractional perimeters, chord integrals, and affine isoperimetric inequalities
**Monika Ludwig**
Technische Universität Wien

15.30 h The anisotropic Bernstein problem in R3
**César Rosales**
Universidad de Granada

16.30 h Valuations and convex geometry I (Video conference)
**Semyon Alesker**
Tel Aviv University

## Martes 30 de julio

09.30 h Applications of partial differential equations to convex geometry II
**Alina Stancu**

10.30 h Harmonic Analysis Methods in Geometric Tomography II
**Vladyslav Yaskin**

12.00 h The Cheeger set of a rotationally symmetric planar convex body
**Antonio Cañete**
Universidad de Sevilla

12.50 h Discrete Brunn-Minkowski type inequalities I
**Jesús Yepes Nicolás**
Universidad de Murcia

15.30 h Poster Session

16.30 h Valuations and convex geometry II (Video conference)
**Semyon Alesker**

## Miércoles 31 de julio

09.30 h Applications of partial differential equations to convex geometry III
**Alina Stancu**

10.30 h A walk around some geometric polynomials
**María Ángeles Hernández Cifre**
Universidad de Murcia

12.00 h On the directions of equilibrium of convex bodies
**Susanna Dann**
Universidad de los Andes

12.50 h Discrete Brunn-Minkowski type inequalities II
**Jesús Yepes Nicolás**

15.30 h The isoperimetric and the Brunn-Minkowski inequalities I
**Andrea Colesanti**
University of Florence

16.30 h Valuations and convex geometry III (Video conference)
**Semyon Alesker**

## Jueves 1 de agosto

09.30 h Harmonic Analysis Methods in Geometric Tomography III
**Vladyslav Yaskin**

10.30 h Pansu-Wulff shapes in the Heisenberg group
**Manuel María Ritoré Cortés**
Universidad de Granada

12.00 h Hard Lefschetz theorem and Hodge-Rimeann relations for convex valuations (Video conference)
**Thomas Wannerer**
Friedrich Schiller Universität Jena

12.50 h Local fixed points of the p-centroid body operators
**Chase Reuter**
North Dakota State University

15.30 h The isoperimetric and the Brunn-Minkowski inequalities II
**Andrea Colesanti**

16.30 h Valuations and convex geometry IV (Video conference)
**Semyon Alesker**

## Viernes 2 de agosto

09.30 h Applications of partial differential equations to convex geometry IV
**Alina Stancu**

10.30 h Harmonic Analysis Methods in Geometric Tomography IV
**Vladyslav Yaskin**

12.00 h What happens when we push balls apart?
**Serhii Myroshnychenko**
University of the Fraser Valley

12.50 h Minkowski and Banach diversities
**Bernardo González Merino**
Universidad de Murcia