Differential Geometry Workshop

Thursday, July 16. 2026, Matematicum, Room 134, Building 303B, DTU

Ca. Time	Speakers and catering
09:30 – 10:00	Coffee and welcome
10:00 – 10:45	Vicente Palmer
11:00 – 11:45	Sigmundur Gudmundsson
12:00 – 13:00	Lunch
13:00 – 13:45	Vicent Gimeno Garcia
14:00 – 14:45	Enrique Pendás-Recondo
14:45 – 15:30	Coffe and cake
15:30 – 16:15	Antonio Alarcón
16:30 – 17:15	Niels Martin Møller
18:00 –	Dinner at a nearby restaurant

Titles and abstracts: P.t.o. ⟼

Vicente Palmer, Departamento de Matemáticas
de la Universitat Jaume I de Castelló:

Concentration of measure for tubes around closed minimal hypersurfaces of the Sphere

In this talk, we generalize the "fat equator"effect on the sphere, namely the concentration of measure of strips around its equators (which act as compact, totally geodesic hypersurfaces). We show that a similar concentration occurs for tubes around any compact, minimal hypersurface of the sphere. This is joint work with Vicent Gimeno.

Sigmundur Gudmundsson: Matematikcentrum,
Lunds Universitet

Harmonic Morphisms and Minimal Conformal Foliations on Lie Groups

Harmonic morphisms are maps $F:(M^m,g)\to(N^n,h)$ between Riemannian manifolds which preserve harmonic functions on the manifolds involved. In the late 1970*s they were characterised, independently by B. Fuglede and T. Ishihara, as those harmonic maps which are horizontally conformal. This means that they are solutions to an over-determined non-linear system of partial differential equations. For this reason their existence theory becomes non-trivial. From the geometric point of view, the case when the codomain is a surface ($n=2$) is particularly interesting. Then each regular fibre of $F:(M,g)\to(N^2,h)$ is a minimal submanifold of (M,g) of codimension* 2*. This means that harmonic morphisms can be seen as a useful tool for constructing such interesting geometric objects. In the first part of this talk, we will describe connections with classical complex analysis and a certain duality to the theory of minimal surfaces in Euclidean* 3*-space. We will then produce multi-dimensional conformal and minimal foliations on low-dimensional Lie groups and show how these induce local complex-valued solutions to our overdetermined non-linear problem.*

Vicent Gimeno Garcia, Departamento de Matemáticas
de la Universitat Jaume I de Castelló:

A Supersymmetric Bridge Between Dirichlet and Neumann Spectra

This talk explores the interplay between spectral geometry and Supersymmetric Quantum Mechanics. We introduce an algebraic factorization of the basic Laplacian on Riemannian submersions with fibers of basic mean curvature. This framework reveals a formal Dirichlet–Neumann spectral duality under the transformation S maps to $1/S$, where S represents the fiber volume function. Joint work with Paulo Henryque da Costa Silva (from UFC-Fortaleza-Brazil). https://arxiv.org/abs/2606.12009.

MORE TITLES AND ABSTRACTS: P.T.O. ⟼

- Enrique Pendás-Recondo, Departamento de Matemáticas de la Universidad de Oviedo:
  Fermat's principle and Snell's law in Finsler spacetimes
  The classical Snell's law is a well-known formula used in Physics to describe the relationship between the angles of incidence and refraction, when light or any other wave passes through the interface of two different isotropic media. This law follows from Femat's principle, which states that the path taken by a wave ray between two given points is the one that makes critical the traveltime. In this talk, we will explore the generalization of Fermat's principle and Snell's law to Finsler spacetimes, i.e., to the case where the wave velocity is anisotropic and time-dependent.

- Antonio Alarcón, Departamento de Geometria y Topologia de la Universidad de Granada:
  Holomorphic null curves in the special linear group
  We shall discuss the approximation theory for holomorphic null curves in the special linear group and derive applications of this theory to surfaces of constant mean curvature 1 *in hyperbolic space.*

- Niels Martin Møller, Institut for Matematiske Fag, Københavns Universitet:
  Uniqueness of tangent planes and (non-)removable singularities at infinity for collapsed translators
  We show that mean curvature flow translators may exhibit non-removable singularities at infinity, due to jump discontinuities in their asymptotic profiles, and that oscillation can persist so as to yield a continuum of subsequential limit tangent planes. Nonetheless, we prove that as time $t \to \pm\infty$*, any finite entropy, finite genus, embedded, collapsed translating soliton in* $\mathbb{R}^3$ *converges to a uniquely determined collection of planes. This requires global analysis of quasilinear soliton equations with non-perturbative drifts, which we analyze via sharp non-standard elliptic decay estimates for the drift Laplacian, implying improvements on the Evans-Spruck and Ecker-Huisken a priori gradient and curvature estimates in the soliton setting, and exploiting a link from potential theory of the Yukawa equation to heat flows with* L^∞ *data on non-compact slice curves of these solitons. The structure theorem follows: such solitons decompose at infinity into standard regions asymptotic to planes or grim reaper cylinders. We give geometric applications in the classification program for collapsed translators. This is joint work with E. S. Gama and F. Martín.*