Abstracts of minicourses

Minicourse on Singularities in Geometry and Dynamics

Hasselt, 22-23 November 2021

Peter De Maesschalck (Universiteit Hasselt)
Planar dynamical systems: questions regarding limit cycles and how to deal with them

Abstract: We present an outline of the techniques our research group uses to tackle questions relating to Hilbert 16th problem. Among the list are normal forms, divergent power series, singular perturbations, bifurcation theory, ... The focus will not necessarily lie on recent results, but rather on giving the audience the opportunity to see what challenges are still around, which techniques have failed and what is the outlook for the future.

Sonja Hohloch (Universiteit Antwerpen)
Introduction to integrable systems

Abstract: In this part of the Minicourse on Dynamical Systems, we first study autonomous Hamiltonian systems and their most important geometric and dynamical properties — among which is energy conservation. Then we will see how this motivates the notion of "integrability" and how this leads to the proper mathematical definition of an integrable system in the sense of Liouville. Throughout the talk, we will give ample examples for the various phenomena appearing.

Ale Jan Homburg (Korteweg-de Vries Institute & VU Amsterdam)
TBC

Abstract: TBC

Marie-Amélie Lawn (Imperial College London)
TBC

Abstract: TBC

Joeri Van der Veken (KU Leuven)
Submanifolds and ambient geometric structures

Abstract: I will introduce geometric structures on Riemannian manifolds, in particular (almost) complex structures and (almost) product structures and discuss how submanifolds can be adapted to such structures. Some examples, in particular of 6-dimensional nearly Kähler spaces and their submanifolds will be given.

Marco Zambon (KU Leuven)
From symplectic to Poisson to Lie

Abstract: I will present some of the basic notions of Poisson geometry, emphatizing the multiple ways in which Poisson geometry is linked to symplectic geometry on one side and to Lie algebras/Lie algebroids on the other.