

Name and surname: Julia Lange
Institution: University of Warsaw
Supervisor: dr hab. Javier de Lucas Araujo

Title:
Foliated PDE Lie systems

Abstract:

In this talk, I will introduce and study a particular class of first-order systems of PDEs: the *foliated PDE Lie systems*. A foliated PDE Lie systems is characterized by the fact that its particular solutions contained in any leaf of a fixed foliation can be written by means of function, a so-called *foliated superposition rule*, of a family of m -particular solutions in the same leaf and a series of constants. I will characterize geometrically foliated PDE Lie systems and I will show that the solutions of foliated PDE Lie systems can be described in terms of a particular class of foliated PDE Lie systems on Lie groups. To illustrate the theory, I will study foliated PDE Lie systems appearing in the study of Lax equations, integrable Hamiltonian systems, and certain extensions of Hamilton-Jacobi equations.