Seminar on Differential Equations,
13.01.2020 (Monday), 2:15 PM, Śniadeckich 8, room 106

PART I

Stanisław Janeczko
    "Residual differential forms on varieties"
Abstract: The geometric restriction of differential forms to singular varieties will be introduced and algebraic restriction of differential forms with vanishing geometric restrictions, called residual forms, will be discussed.

Wojciech Kryński
    "Integrable systems and geometry"
Abstract: I will present geometric methods that can be exploited to investigate PDEs. I'll concentrate on certain classes of PDEs in two and three independent variables

Jacopo Schino
    "Cylindrical symmetry and normalized solutions"
Abstract: In my current research I am dealing with functions in R^3 satisfying cylindrical symmetry, i.e. radial with respect to the first two variables; this allows to reduce the curl-curl operator to the Laplacian. I am also dealing with normalized solutions to Schrödinger equations, i.e. with prescribed L^2 norm.

PART II

Piotr Gwiazda
    TBA

Tomasz Adamowicz
    „Topics in Geometry and Analysis|"
Abstract: I will present selected topics in the geometric mapping and function theory focusing on various notions of harmonic functions and mappings on Riemannian manifolds, Carnot groups and more general metric measure spaces.

Jakub Siemianowski
    "Systems of elliptic PDEs on $\mathbb{R}^N$ -- topological approach"

Asahi Tsuchida
    "The obstacle problem in sub-Riemannian manifolds"
Abstract: In the obstacle problem in Euclidean space one deals with geometry of a systems of rays, which is the set of shortest paths from a point to initial set. Systems of rays forms Lagrangian variety and stable singularities were considered by V.I. Arnold. In this talk I introduce the generalization of the problem to Riemannian manifolds and sub-Riemannian manifolds.

PART III

Joanna Rencławowicz and Wojciech Zajączkowski
   "Regularity problem for weak solutions to the Navier-Stokes equations in the periodic case"
Abstract: It is the first step to examine the Navier-Stokes fluids in elastic domains, possibly with large flux in inflow-outflow case.

Michał Łasica
   "Regularity of minimizers of functionals with linear growth"
Abstract: We consider convex integral functionals composed of the sum of a term of linear growth in the gradient of the argument, and a fidelity term involving L2 distance from a datum. A typical example is the Rudin-Osher-Fatemi denoising model. We investigate inheritance of various regularity properties from the datum by minimizers.

Bronisław Jakubczyk
   "A global implicit function theorem on manifolds and the Jacobian conjecture"
Abstract: I will state a global version of the implicit function theorem on manifolds and show how flows of a family of vector fields define the graph of such a function. The method suggests a new approach to the Jacobian Conjecture with the use of ODEs.