LABORATORY OF MATHEMATICS AND ITS APPLICATIONS
LAMAV

Director: F. Ali Mehmeti

Adjoint Director: L. Vrancken

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Research group
Computer Aided Geometric Design
Head: Serge Nicaise

Research group
Partial Differential Equations and Probability Theory
Head: Serge Nicaise

Research group
Geometry and Global Analysis
Head: Luc Vrancken

Research group
Number Theory and Algebraic Topology
Head: Manfred Hartl

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Serge Nicaise, Luc Vrancken, Manfred Hartl and Felix Ali Mehmeti

LAMAV
Campus Mont Houy
59313 Valenciennes cedex 9
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> COMPUTER AIDED GEOMETRIC DESIGN

> GEOMETRY AND GLOBAL ANALYSIS

> PARTIAL DIFFERENTIAL EQUATIONS AND PROBABILITY THEORY

> NUMBER THEORY AND ALGEBRAIC TOPOLOGY

> ÉQUIPE D’ACCUEIL : EA 4015

> FÉDÉRATION DE RECHERCHE : FR CNRS 2956
 OUR MISSIONS

- Cover the main research fields in mathematics: algebra, analysis, probability theory, geometry
- Contribute to the domain of mathematics and its applications on international level
- Exploit our specific competences in external projects and industrial collaborations
- Develop the doctoral training and participate in research master programs
- Help pupils and the large public to discover and to like mathematics in a new way

 OUR EXPERTISE

A BROAD SPECTRUM OF RESEARCH IN MATHEMATICS WITHIN AN INTERNATIONAL NETWORK

The Lamav is a research institute accredited since 2006 by the ministry of higher education (EA 4015) and is member of the regional Federation of Research in Mathematics FR CNRS 2956. The laboratory has about 50 members (9 professors, 27 lecturers, and around 10 doctoral students). The recruiting of our doctoral students is carried out thanks to our master program in mathematics (co-accredited with the universities of Artois, Lille 1 and Littoral-Côte d’Opale) but also by our international contacts. The start-up of a master program in applied mathematics called “Modélisation, Optimisation, Security” is planned for September 2017.

The laboratory is located in the buildings of the Institute of Science and Technology of Valenciennes on the Campus Mont Houy. The proximity of the other research laboratories and of the technology park Transalley promotes our research activities and collaborations. Thanks to the Federation of Research, the Lamav benefits from a high level regional mathematics library.

 OUR DOMAINS OF APPLICATION

- Electromagnetism
- Transport
- Multi-structures
- Crowd dynamics
- Ceramic materials
- Crack propagation
- Quantum mechanics
- Fluid mechanics
- Coding theory
- Animation/imaging
- Computer Aided Geometric Design
  - Interpolation and approximation of data
  - Virtual reality and haptic interfaces
  - Design of trajectories
  - CAD representation of special surfaces
- Partial Differential Equations and Probability Theory
  - Modelisation
  - Numerical approximation
  - Deterministic and stochastic control
  - Non linear problems
  - Convex analysis
  - Stochastic partial differential equations
- Geometry and Global Analysis
  - Differential geometry of submanifolds
  - Geometric modelisation
  - Theory of foliations
  - Global analysis (real and complex)
  - Dynamical systems
  - Representation theory and mathematical physics
- Number Theory and Algebraic Topology
  - Algebraic number theory : Galois module structure–Steinitz classes and realizable Galois module classes
  - Investigations of algebraic extensions of number fields
  - Commutators and linearization of algebraic structures
  - Algebraic structures of polynomial type and applications
  - Group homology, filtrations of group algebras

 NATIONAL AND INTERNATIONAL RESEARCH COLLABORATIONS

Between 2008 and 2013:

- 206 papers in international journal
- 84 co-authored papers from international collaborations
- 13 thesis defences
- 24 organized conferences,
- Several interlaboratory projects and industrial collaborations

 THE RECOGNITION OF OUR MINISTRY

The AERES 2014 report:

- Sustained research activity on a high level
- Manifold international relations and numerous co-authored publications
- Highly developed regional integration
- Very strong activity of dissemination of mathematics
- Good cohesion and integration within the laboratory
- Very good professional insertion of the doctors

HELP PUPILS AND THE LARGE PUBLIC TO DISCOVER AND TO LIKE MATHEMATICS IN A NEW WAY

The aim of our interactions with the world of education (such as « Math.en.JEANS », « Mathématiques nomades », « stages lycéens », « concours ») is to help to discover mathematics from a different viewpoint through participative workshops. Especially we try to:

- Illustrate the potential of mathematics
- Help to discover playful aspects of mathematics by practicing research
- Develop the curiosity and the interest for scientific topics
- Promote a better knowledge of the professions associated with mathematical research
- Encourage scientific careers

4 RESEARCH GROUPS

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