Communications in Mathematics

László Kozma
Editorial

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I am pleased to introduce this issue of *Communications in Mathematics* which is devoted to research and survey papers on topics in differential geometry and variational calculus. As well as two regular papers it contains some contributions from workshops on differential geometry held in Ostrava in May and October 2011.

The cooperation of the Czech and the Hungarian research groups in differential geometry has a long tradition. This year we held the 7th Bilateral Joint Workshop on Differential Geometry, previously were held in Opava, Ostrava, Olomouc in the Czech Republic and Debrecen, Síkfőkút in Hungary. The core interest of the two groups is common: geometrization of differential equations and variational calculus on manifolds. While the Czech team reached remarkable results on the variational aspects, the Hungarian group is strong in Finsler geometry. So the aspects fruitfully complete each other.

This issue contains the written version of the minicourse of David Saunders, five research papers and a survey paper, and a book review. Almost all were read at the latest workshops.

- Saunders' work presents the material of the minicourse which introduces a version of the geometrical background of the problem where the extremals are submanifolds, but where the action function still depends upon no more than the first derivatives of the submanifold.

- The paper of Fatibene, Francaviglia and Mercadante shows that when in a higher order variational principle one fixes fields at the boundary leaving the field derivatives unconstrained, then the variational principle is not invariant with respect to the addition of the boundary terms to the action.

- In their paper Muzsnay and Nagy aim at finding the largest Lie algebra of vector fields on the indicatrix such that all its elements are tangent to the holonomy group of a Finsler manifold.

- Szilasi and Tóth apply the apparatus of the calculus along the tangent bundle projection, and give a series of characterizations of affine and conformal vector fields on Finsler manifolds.

- Havelková studies the dynamics of singular Lagrangian systems described by implicit differential equations from a geometrical point of view using the approach of exterior differential systems.

- In the field of variational principles, Tulczyjew's new notes are based on the definition of equilibrium related to the response of a system to virtual displacements rather than the minima of the internal energy.

I am sure that these works will stimulate further studies in their respective subjects, and that international collaboration and joint meetings such as ours will accelerate scientific advance in fields of common interest.

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