The 9ᵗʰ International Workshop on Differential Geometry and its Applications

Exploratory Workshop on hyperbolic geometry, Dirac operators, harmonic maps, and Jordan manifolds

The contribution of Romania to the international mathematical community in the field of geometry (especially differential geometry) is very significant. In this context, the Institute of Mathematics of the Romanian Academy from Bucharest (IMAR), has played an important role. This institute was founded 60 years ago (in 1949) and, despite the period 1975 – 1990 (which was – from social point of view – dramatic, and – from cultural point of view – tragic) is still an outstanding research institute of top scientific level. Last June, this anniversary was celebrated at IMAR through a scientific session. Let us mention also that this year (2009) we are commemorating 70 years since the death of Gheorghe TZITZEICA (1873 – 1939), and 30 years since the death of Gheorghe VRĂNCEANU (1900 – 1979), which are the founders of modern differential geometry in our country.

Taking into account on one hand the long tradition in the study of differential geometry in Romania and, on the other hand, the fact that after 1989 to organize international meetings in Romania became easier, sixteen years ago (in 1993) I began to organize every other year (together with some of my colleagues) a series of international workshops on differential geometry and its applications. The first eight workshops were organized in Bucharest, Constanta, Sibiu, Brasov, Timisoara, Cluj-Napoca, Deva and (again) Cluj-Napoca.

Between 1997 and 2007, in cooperation with my colleague Tudor ZAMFIRESCU (professor – until now – at the University of Dortmund – Germany), I organized a series of four German – Romanian Seminars on Geometry: two in Romania (in 1997 – Sibiu and in 2003 – Cluj-Napoca) and two in Germany (in 2000 and 2007 in Dortmund).

This year, the organizers of the workshop are: Mihai ANASTASIEI (University "Al. I. Cuza" – Iasi), Radu IORDĂNESCU (IMAR), and Sergiu MOROIANU (IMAR).

The main goal of these meetings was to offer, especially to young Romanian mathematicians, the opportunity of direct contact with outstanding personalities over the world and to establish further scientific cooperations with them. In this respect, more than 30 talented Romanian young geometers (from Arad, Bucharest, Constanta and Timisoara) obtained – through above mentioned workshops and seminars – grants for summer schools, as well as master, Ph. D. or postdoc grants in Switzerland, France, Germany, Italy, Spain and USA.

As a consequence of these workshops three important and efficient scientifical agreements were signed, namely: between the University of the West (Timisoara) and the University "La Sapienza" (Rome, Italy), between "Ovidius" University (Constanta) and the University of Granada (Spain) and – recently – between the University of the West (Timisoara) and the University of Santiago de Compostela (Spain). These agreements continue to offer an interchange of professors and students of the above mentioned universities, the main beneficiaries being – also this time – the young Romanian geometers having special abilities for scientific research. After the second workshop (Constanta, 1995), the "Ovidius" University of Constanta developed (and is still developing) a strong mathematical cooperation with IMAR: there are courses in Constanta given by members of IMAR, and part-time positions of them at "Ovidius" University.

It is worth being mentioned here the fact that these workshops were attended by almost all Romanian geometers of international level from Bucharest, Brasov, Cluj-Napoca, Iasi and Timisoara, and also the fact that the invited lectures, as well as some communications, were published in special volumes, which was – again – in the benefit of young Romanian geometers (attending or not these

meetings).

I think that it is important to point out that among the participants from abroad were outstanding mathematical personalities, and also brilliant Romanian mathematicians from famous universities over the world.

The libraries of the universities which have co-organized with IMAR the workshops have benefited – also as a consequence of the workshops – from book donations and some facilities concerning mathematical journals, as well as a more easy and rapid access to the mathematical information (with the help of Zentralblatt für Mathematik).

The first four workshops have contributed to the very good evaluation of IMAR in the competition organized by European Commission – General Directorate for Research – in the frame of the Programme "Confirming the International Role of Community Research" (Support for Centers of Excellence). Consequently, in 2000, IMAR became Center of Excellence of the European Union for the period March 2001 – June 2004.

Last but not least, I would like to point out that the series of the above mentioned workshops and seminars have stimulated other younger colleagues to organize international meetings on differential geometry and related topics at the University Transilvania of Brasov (in 2007 and 2008), and at the University Politehnica of Bucharest (in 2007, 2008, and October 2009).

Bucharest
July 2009

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Program

Tuesday 01.09.2009
Arrival

Wednesday 02.09.2009

09:00 – 09:10	Opening	
09:10 – 10:00	Kaup	Local tube realizations of CR-manifolds
10:00 – 10:20	*Coffee break*	
10:20 – 11:10	Marchiafava	Quaternionic maps, CR quaternionic manifolds and related structures
11:20 – 12:10	Burghelea	Complex L^2-torsion
12:10 – 14:30	*Workshop lunch*	
14:30 – 15:20	Andrica	New results involving functions with minimal critical set
15:20 – 15:50	*Coffee break*	
15:50 – 16:40	Golenia	On the instability of embedded eigenvalues
16:50 – 17:20	Funar	Quantization of Teichmuller space and central extensions
17:30 – 18:00	Oniciuc	On the stress-energy tensor for biharmonic maps
19:00	*Workshop dinner*	

Thursday 03.09.2009

09:00 – 09:50	Dorfmeister	Radially symmetric spacelike surfaces of constant mean curvature in Minkowski 3-space and relations with quantum cohomology
09:50 – 10:20	*Coffee break*	
10:20 – 11:10	Guillarmou	Calderon inverse problem on Riemann surface
11:20 – 12:10	Park	Analytic torsion and Ruelle zeta function for hyperbolic manifolds
12:10 – 14:30	*Workshop lunch*	
14:30 – 15:20	Haller	Dynamics and analysis of closed one forms
15:20 – 15:50	*Coffee break*	
15:50 – 16:40	Kordyukov	Adiabatic limits on foliated manifolds
16:50 – 17:20	Slesar	Dirac-type operators and smooth distributions on Riemannian manifolds
17:30 – 18:00	Damian	On involutions without fixed points on reconstructed Davis manifold
19:00	*Workshop dinner*	

Friday 04.09.2009

09:00 – 09:50	Teleman	Homological Local Index Theorem
09:50 – 10:20	*Coffee break*	
10:20 – 11:10	Gentili	Extension results for slice regular functions of a quaternionic variable
11:20 – 12:10	Stacho	Jordan manifolds

12:10 – 14:30	*Workshop lunch*	
14:30 – 15:20	Loya	Witten's holonomy theorem for manifolds with corners
15:20 – 15:50	*Coffee break*	
15:50 – 16:40	David	Conformal-Killing forms in quaternionic geometry
16:50 – 17:20	Otera	Almost-equivalent properties of discrete groups
17:30 – 18:00	Buliga	Approximatively symmetric spaces and their metric geometry
18:10 -18:40	Munteanu	Constant angle surfaces in 3-dimensional spaces
19:00	*Workshop dinner*	

Saturday 05.09.2009
Departure

List of participants

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