Final Report
Geometry and dynamics of integrable systems

Centre de Recerca Matemàtica CRM, Barcelona and ICMAT-Madrid

Scientific Organizers:
V. Matveev (University of Jena, Germany)
E. Miranda (Universitat Politècnica de Catalunya, Spain)
F. Presas (Consejo Superior de Investigaciones Científicas, Spain)
I. Taimanov (Novosibirsk)

Dates: Sept 9th-November 9th, 2013
url: http://www.crm.cat/en/Activities/Pages/ActivityDescriptions/RP-Geometry-and-Dynamics-of-Integrable-Systems.aspx

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1. Summary of the Programme.

The program took place partly at Centre de Recerca Matemàtica(Barcelona) and partly at ICMAT-Madrid.

1.1. Main topics of the Programme and objectives

This research Programme has been focused on the Geometrical and the Dynamical aspects appearing in the study of integrable systems and its connections to Symplectic Topology.

Recently, new powerful methods for working with integrable systems have been developed. These methods are based on a deep interplay between different branches of mathematics (and physics) a priori unconnected: complex analysis, symplectic and complex geometry, Lie theory, representation theory and computer algebra. New integrable systems have been found, new applications of integrable systems in physics and geometry have been unveiled and new tools to work with integrable systems have been developed. As a consequence, in the last 10 years many questions explicitly asked by the classics could be answered.

In this rapidly evolving field quite a number of different approaches have been put forward, somewhat distinct in their structure, in the mathematical tools, and the mathematical language involved. One of the aim of this project was to bring together experts in mathematics and in mathematical physics so as to obtain a global, and possibly complete, account of the most recent developments in the field of finite dimensional integrable dynamical systems and their applications. We think we have succeeded in doing so.

The program has concentrated on the following topics:

1. Connections of several aspects showing up in the geometry, topology and dynamics of integrable systems in symplectic manifolds such as singular aspects of integrable systems, symplectic topology of integrable systems, integrability criteria and obstructions to integrability, connection with Geometric Quantization and integrable systems in contact and Poisson manifolds.
2. Role of Symplectic techniques with special emphasis on modern Symplectic and Contact Topology techniques (such as Floer Homology) in Dynamics of Hamiltonian systems.
3. Study of geodesic flows, their integrability and non-integrability: methods and examples.
4. Study relations with moduli spaces theory: integrable systems arising as symmetry reductions of Yang-Mills equations, integrable systems naturally arising as moduli spaces of bundles (Hitchin integrable system, etc.)
5. Applications to Mathematical Physics and classical differential geometry.

Such a mix of scientific subjects and researchers has triggered new research and collaborations in the field of finite dimensional integrable systems, and its connections to Symplectic Topology.

1.2 List of invited researchers

Researcher	Arriving day	Leaving day	University
Romero Barbieri Solha	09/09/2013	30/11/2013	Universitat Politècnica de Catalunya
Alexei Bolsinov	09/09/2013	13/10/2013	University Loughborough Leicestershire
Roger Casals	09/09/2013	04/10/2013	ICMAT/CSIC Madrid
Chiara Esposito	09/09/2013	20/09/2013	Mathematisches Forschungsinstitut Oberwolfach
Pedro Frejlich	10/10/2013	08/11/2013	University Utrecht
Anna Kiesenhofer	09/09/2013	09/11/2013	Universitat Politècnica de Catalunya
Jean-Pierre Marco	15/09/2013	28/09/2013	Université Pierre et Marie Curie
David Martínez Torres	10/10/2013	08/11/2013	Instituto Superior Técnico
Vladimir Matveev	07/09/2013	03/10/2013	Friedrich-Schiller Universität Jena
Eva Miranda	09/09/2013	09/11/2013	Universitat Politècnica de Catalunya

Andrey Mironov	09/09/2013	08/10/2013	Sobolev Institute of Mathematics
Philippe Monnier	03/10/2013	12/10/2013	Université Paul Sabatier
Philippe Monnier	23/10/2013	03/11/2013	Université Paul Sabatier
Klaus Niederkruger	15/09/2013	13/10/2013	Université Paul Sabatier
Alvaro del Pino	08/09/2013	04/10/2013	Universidad Autonoma de Madrid
Francisco Presas	08/09/2013	08/10/2013	Instituto de Ciencias Matemáticas
Stefan Rosemann	08/09/2013	06/10/2013	Friedrich-Schiller Universität Jena
Konrad Schöbel	09/09/2013	04/10/2013	Friedrich-Schiller Universität Jena
Iskander Taimanov	15/09/2013	21/09/2013	Institute of Mathematics
Vassil Tzanov	09/09/2013	09/11/2013	Bristol University
Andreas Vollmer	08/09/2013	02/10/2013	Friedrich-Schiller Universität Jena
Jonathan Weitsman	05/10/2013	19/10/2013	Northeastern University
Yasha Savelyev	15/10/2013	22/10/2013	ICMAT

Activities

2. ACTIVITY 1- Advanced Course for the Research Programme at CRM Geometry and Dynamics of Integrable Systems. Dates: September 9-14, 2013.
Webpage:
http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs%202013-2014/acintegrablesystems/acintegrablesystems.aspx

Organizing and scientific committee:

Vladimir Matveev (Jena)
Eva Miranda (UPC)
Francisco Presas (ICMAT)
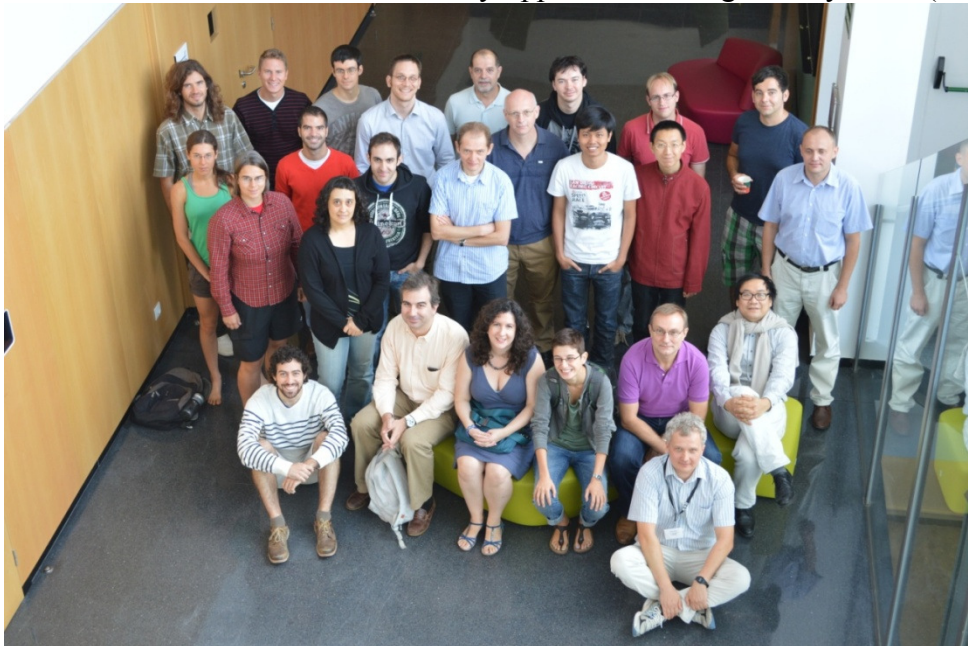Iskander Taimanov (Novosibirsk)

Speakers at Minicourses

Alexey Bolsinov (Louborough) *"Singularities of bi-Hamiltonian systems and stability analysis" number of sessions: 4*

Juan Jose Morales- Ruiz (UPM) ” *Integrable Systems and Differential Galois Theory” number of sessions: 4*

Nguyen Tien Zung (Toulouse) *"Geometry of integrable non-Hamiltonian systems" number of sessions: 4*

Timetab	Monday	Tuesday	Wedn	Thursday	Friday	Saturda
9:30-10:30	Taimanov (opening)	Bolsinov	FREE DAY	Morales	Bolsinov	Bolsinov
10:30-11	Coffee Break	Coffee Break		Coffee Break	Coffee Break	Coffee Break
11-12	Morales	Morales		NguyenTienZung	NguyenTienZung	Morales
12:15-13:15	Bolsinov	Solha		Esposito	Casals	Rosemann
13:15-15h	LUNCH	LUNCH		LUNCH	LUNCH	
15h-16h	Nguyen Tien Zung	NguyenTienZung		Open Problems sesión (by Speakers)	Open Problems Session (by Organizers)	
16-16:30h	Coffee Break	Coffee Break				
16:30-17:30	Holoch	JiangKai				
			Dinner at 20h			

Goals: The main goal of the Advanced Course was to gather several specialists in integrable systems from different perspectives: The one of Symplectic Topology (by Alexei Bolsinov), on in Geometry of integrable systems (by Nguyen Tien Zung) and one in the Differential Galois Theory approach to integrable systems (Morales-Ramis

theory by Juan José Morales Ruiz). The idea of this advanced course allowed to have plenty of communication among participants and a strong interaction between and young researchers. The program enhanced the participation of PhD students and

Postdocs who gave talks and there were also a couple of sessions devoted to open problems.

3. ACTIVITY 2- Conference of the Research Programme at CRM "Integrability, Topological obstructions to Integrability and interplay with Geometry", **Dates: September 16-20, 2013.**
Webpage:http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs %202013-2014/Cintegrability/Cintegrability.aspx

Organizing and scientific committee:

Valerij Vasilievich Kozlov (Moscow)
Franco Magri (Milano)
Vladimir Matveev (Jena)
Eva Miranda (UPC)
Francisco Presas (ICMAT)
Iskander Taimanov (Novosibirsk)
Dmitry Treschev (Moscow)
Christian Duval (Marseille)

List of Speakers

Alain Albouy, CNRS
Alexey V. Borisov, Udmurt State University
Vincent Colin, Université de Nantes
Lucia Di Vizio, Université de Versailles-St Quentin
Christian Duval, Centre National de la Recherche Scientifique Marseille, France
Yuri Fedorov, Universitat Politècnica de Catalunya
Rui Loja Fernandes, University of Illinois at Urbana-Champaign
Alexander Kilin
Boris Kruglikov, University of Tromsø
Jean-Pierre Marco, Université Pierre et Marie Curie
Andrey Mironov, Sobolev Institute of Mathematics
Klaus Niederkruger, Université Paul Sabatier
Valentin Ovsienko, Universite Claude Bernard (Lyon)
Daniel Peralta, ICMAT
Konrad Schöbel, Friedrich-Schiller Universität Jena
Dmitry Treschev, Steklov Mathematical Institute
Jacques-Arthur Weil, Université de Limoges

Goals
The main goal of this workshop was to gather specialists in different aspects of integrable systems including geometrical aspects, dynamical aspects and connection with other areas like mathematical physics.. There were invited and contributed talks

Participants of the Conference

Schedule

Timetable	Monday	Tuesday	Wednesday	Thursday	Friday
9:30-10:30	Rui Loja Fernandes (opening)	Di Vizio	Ovsienko	Kozlov	Colin
10:30-11	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11-12	Duval	Weil	Bolotin	Peralta	Kruglikov
12:15-13:15	Mironov	Mamaev	Niederkruger	Panasyuk	Marco
13:15-15h	Lunch	Lunch		Lunch	Lunch
15h-16h	Albouy	Dreyfus	Free afternoon	Schobel	Salnikov
16-16:30h	Coffee Break	Coffee Break		Coffee Break	Coffee Break
16: 30-17:30	Fehrer	Ballesteros		Sachkov	Treschev (closing)
17:30-18:30			Official (at 20h)Dinner	belagaborpusztai	

4. ACTIVITY 3- "Qdays in Barcelona", **Dates: October 16-18, 2013**
Webpage:
http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs%202013-2014/Qdays/QdaysinBarcelona.aspx

Organizing and scientific committee:

Chiara Esposito (UAB, postdoc)
Eva Miranda (UPC)
Francisco Presas (ICMAT)
Romero Solha (UPC, PhD student)

Speakers
Pierre Bieliavsky (Louvain)
Sergei Gukov (Caltech)
Simone Gutt (Bruxelles-Metz)
Mark Hamilton (Mount Allison)
Peter Hochs (Adelaide)
Stéphane Korvers (Louvain)
Ryszard Nest (Copenhagen)
Paul-Émile Paradan (Montpellier)
Martin Schlichenmaier (Luxembourg)
Jedrzej Sniatycki (Calgary)
Jonathan Weitsman (Northeastern)

Goals:

We have gathered specialist in Quantization from different points of view (like Quantization by Deformation and Geometric Quantization) in order to compare different methods. This has allowed to explore related areas like Representation Theory,

Integrable systems , Mirror Symmetry Semi-Classical Analysis and Foliated Cohomology.

timetable	Wednesday	Thursday	Friday
10:00-11:00	Weitsman	Bieliavsky	Gutt
11:00-11:30	coffee	coffee	coffee
11:30-12:30	Paradan	Martinetti	Gukov
12:30-15:00	lunch	lunch	lunch
15:00-16:00	Sniaticky	Schlichenmaier	Hamilton
16:00-16:30	coffee	Hochs	coffee
16-30-17:30	Korvers		Nest
17:30-19:30		Q-concert	

Participants of the Qdays the first day of the conference

5-Activity 4:Closing activity: Symplectic Techniques in Dynamical systems
Webpage: http://www.icmat.es/congresos/STDS/index.html

There was a closing conference of the program in Madrid under the auspices of the Viktor Ginzburg Lab. This activity was not financed by CAST but it is part of the program.

The organizers of this conference were

Alberto Enciso

Viktor Ginzburg

David Martin de Diego

Eva Miranda

Daniel Peralta Salas

Francisco Presas

The speakers of this conference were

Alberto Abbondandolo (Bochum)
Marta Batoréo (Instituto Nacional de Matemática Pura e Aplicada)
Michael Bialy (Tel Aviv University)
Paul Biran (ETH Zurich)
Lev Buhovski (Tel Aviv University)
Marc Chaperon (Institut de mathématiques de Jussieu)
Octav Cornea (University of Montreal)
Basak Gurel (University of Central Florida)
Alberto Ibort (Universidad Carlos III de Madrid)
Ely Kerman (University of Illinois at Urbana-Champaign)
David Martínez (Utrecht University)
Vladimir Matveev (Universität Jena)
Will Merry (ETH Zürich)
Klaus Niederkruger (Université Paul Sabatier)
Yaron Ostrover (Tel Aviv University)
Leonid Polterovich (University of Chicago)
Ana Rechtman (Université de Strasbourg)
Sheila Sandon (CNRS)
Iskander Taimanov (Novosibirsk State University)
San Vu Ngoc (Université de Rennes)
Chris Wendl (University College, London)

6. Budget

We got co-financing from the following institutions:

- The Clay Institute co-financed with 6000 euros for a list of distinguished researchers.
- The CRM covered some invited participants, the administrative cost of the activities, the material of the participants. The CRM also financed the stay of a postdoctoral researcher (Maria Amelia Salazar) using the Dev-Program and the visits and excursions offered to participants.(this contribution is estimated in 5911,40 euros).

- The Catalan Government (Generalitat de Catalunya) cofinanced some living expenses and covered some lunch tickets during activities 1, 2 and 3 and coffee breaks via the **SGR-Geometria Diferencial** with a total amount of 3266.01 euros.
- The ICMAT via the Viktor Ginzburg lab (Severo Ocha Program)-financed 3000 euros.
- The University of Jena financed the participation of some of the Researchers with an estimated amount of 2500 euros.
- The local research groups contributed with the support of Projects from Ministerio de Economia y Competitividad with a total amount of 1000 euros.

Due to severe cuts in the Spanish and Catalan economy that have seriously affected the politics in Research, we regret to inform that the CRM contribution was drastically cut after the Research Program was approved. This is why we had to cut on the support for trips of main speakers of the conferences. The ones which were covered by the Clay foundation have been kept. We decided to keep the support of young researchers which we have been able to complement thanks to the generous support from the Viktor Ginzburg Lab at ICMAT (Severo Ochoa Program). We remain thankful to the institutions above and, specially, to the European Science Foundation network CAST. The support of CAST has been fundamental for the feasibility of this program.

Details of budget: We have spent 16.387,16 out of the 16400 that we got from CAST

- Lodging grants for Ph.D students and postdocs at Vila Universitària: **4752,56**
- Lodging of invited researchers at Vila Universitaria: **5770,73**
- Lodging of invited speakers in Hotel Campus: **3644,58**
- Lodging of other invited researchers of the program :   **600,16**
- Living expenses of invited participants: **1412,59**
- Trips of invited participants: **206,54**
- Total CAST contribution**:   16387,16**

7.Assessment of the results and impact of the event on the future directions of the field

The Research Program has made possible to start new interactions among the visitors which will hopefully blossom in nice and solid collaborations. We also outline the positive communication between of Ph.D students, postdocs and established researchers.

There has been a strong synergy between researchers of Dynamical aspects of the study of integrable systems and researchers of Symplectic Topology techniques which belong to the realm of CAST network. We believe that this interaction between these different facets of the study of Hamiltonian systems will be very important in the short-medium run.

Many new working teams have started under the auspices of this research program. Right now we can report that the interaction among the CAST groups in Madrid, Barcelona and Toulouse has been fostered but also among research groups in Jena and Loborough.

Also the addition of some researchers by the co-funding of the Clay institute have added a lot of interesting new established collaborators to the list of participants (like Jonathan Weitsman and Sergei Gukov) who interacted very actively with the groups of Ph.D. students in Barcelona.

The role of the members of CAST from other nodes who were visiting during the activities has been an important one: We want to specially outline the participation of Vincent Colin, Klaus Niederkruger, Chris Wendl, Pedro Frejlich and David Martinez.

Also the participation of Viktor Ginzburg and other of the lab (including the new postdoc Yasha Savelyev) has led to many interesting discussions and overlaps of researchers with complementary interests.

7.1 Participants and training programme

One of the objectives of this programme was to attract Ph.D students and postdocs in the area. The Advanced Course would be specially focused as a training activity for them.

Besides the official activities of the program described above there were the following seminars and working groups:

Regular seminar:

Webpage:
http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs%202013-2014/RPIntegrable/Integrable_Seminar.aspx

The visiting researchers have lectured about their present topics of interest. The goal of the weekly Seminar is to contribute to dissemination of research, to provide an opportunity for scientific exchange and to initiate joint research projects.

List of sessions:

Thursday, November 14 at 11 am
Florent Balacheff, Université Lille
Systolic and contact geometry

Thursday, November 7

David Martinez, Instituto Superior Técnico
An example of a Poisson manifold of strong compact type

Thursday, October 31

From 9:30 to 10:30
M. Amelia Salazar, IMPA
Jacobi structures and Spencer operators

From 11:00 to 12:00
Adrien Boyer, Marseille Université
Unitary representations on the Furstenberg boudary, and some aspect apsects of ergodic theory: the case of SL(2,R)

Thursday, October 24
Philippe Monnier, Université Paul Sabatier
Linearization of smooth Poisson structures

Thursday, October 10
Jonathan Weitsman, Northeastern University
Semiclassical analysis, loop group characters, and the modular group action

Thursday, September 26
Volodya Roubtsov, Université Angers
Parameter-dependent Poisson-structures: from usual to double

Thursday, October 3
Vladimir Matveev, Friedrich-Schiller Universität Jena
(Non)existence of integrals that are polynomial in momenta

Working Groups:

There were working groups on the following topics
- *Junior Working Group on Toric Manifolds* (organized by Roger Casals, Alvaro del Pino and Anna Kiesenhofer)
- *Taut Working group* (organized by Francisco Presas and Klaus Niederkruger)
- *Ham Seminar* (organized in Madrid by Francisco Presas with the participation of Yasha Savelyev and other members of the Viktor Ginzburg lab).
- *Gukov's Seminar* (informal seminar organized in Barcelona to understand the link between Mirror Symmetry and Geometric Quantization: Organizers: Eva Miranda and Abdó Roig). This informal seminar was inspired by the talk of Sergei Gukov and conversations with him during the Qdays.

7.2 Dissemination of results of the program:

The CRM has special collection of preprints. Participants of the program were encouraged to contribute.

Besides this we outline the following two important publications

Publication of Notes of the Advanced Course:

The CRM has a special agreement with Birkhauser to publish these notes (or rather an improved version of them) as a book. They will appear in this special collection: http://www.springer.com/series/5038 . The editors of this issue will be Vladimir Matveev (Jena) and Eva Miranda (Barcelona)

Special Issue at the Journal of Geometry and Physics:
There will be a Special issue of the Journal of Geometry and Physics collecting papers in the topic of integrable systems. Participants of the program have been encouraged to submit papers to this special issue. Also participants of the conference *Finite Dimensional Integrable Systems* (FDIS 2013, CIRM July 2013) and the research program *Integrable Systems in the XXI century: symplectic, algebraic and spectral theory (Lausanne, September-December 2013)* have been encouraged to submit papers to this Special Issue.
Topic: Finite dimensional integrable systems: on the crossroad of algebra, geometry and physics.
Editors: Vladimir S. Matveev, Eva Miranda, Vladimir Rubtsov, Sergei Tabachnikov San Vu Ngoc.
More information on the webpage:
http://www.journals.elsevier.com/journal-of-geometry-and-physics/call-for-papers/topical-issue-of-the-journal-of-geometry-and-physics/

This special issue is expected to be published in 2014.

7.3. Preprints:

Some preprints have been finished during this program.
We outline the following ones:

1- Roger Casals, Viktor Ginzburg and Francisco Presas, Higher dimensional Maslov, preprint 2013.
2- Roger Casals, Francisco Presas and Sheila Sandon, Small positive loops in the contactomorphism group, preprint 2013.
3- Pedro Frejlich, David Martínez Torres, Eva Miranda, Symplectic topology of b-symplectic manifolds, arXiv:1312.7329.
4- Stefan Rosemann and Konrad Schobel, Open Problems in the theory of integrable systems and related fields, preprint 2013 (on the open problems sessions of the advanced course-activity 1).

Status*	Title**	Firstname	Surname	Natior	Date of Birth	Gender	Department	Instit	University	Organ	Address	Postal Code	Town	Country	Email	Web
Participant	Mr	Alexei	Bolsinov			Male			University Loughborough	Leicestershire		LE11 3TU	Leicester	UK	A.Bolsinov@lboro.ac.uk	
Participant	Mr	Abdó	Roig-Marange	ES	26/08/1983	Male	Matemàtica Aplicada 1		Universitat Politècnica de Catalu		Av. Diagonal, 647	08028	Barcelona	España	abdo.roig@gmail.com	
Speaker	Mr	Alain	Albouy			Male			IMCCE- CNRS-UMR					FR	Alain.Albouy@imcce.fr	
Participant	Mr	Alvaro	del Pino	CT	13/08/1985	Male			ICMAT/CSIC Madrid		C. Serrano 123	28006	Madrid	ES	alvaro.pino@estudiante.uam.es	
Participant	Mr	Andratx	Bellmunt Gira	CT	13/08/1985	Male	Àlgebra i Geometria		Universitat de Barcelona		Gran Via de les Corts Catalane:	08007	Barcelona	Catalunya	andratx.bellmunt@gmail.com	
Participant	Mr	Angel	Ballesteros Ca	ES	09/04/1967	Male	Physics		Universidad de Burgos		Plaza Misael Bañuelos s.n.	09001	Burgos	España	angelb@ubu.es	
Participant	Mrs	Anna	Kiesenhofer	AT	14/02/1991	Female	Departament de Matemàtica		Universitat Politècnica de Catalu		Av. Diagonal 647	08028	Barcelona	Catalunya	anna.kiesenhofer@upc.edu	
Speaker	Mr	Sergey	Bolotin			Male									bolotin@math.wisc.edu	
Speaker	Mr	Boris	Kruglikov			Male			Ankara University					NO	boris.kruglikov@uit.no	
Speaker	Mr	Alexey	V. Borisov			Male									borisov@rcd.ru	
Participant	Mr	hichem	boughazi	AL	07/04/1973	Male			Université Abou Bekr Belakid Tl		n=2 aboutachfine	13000	tlemcen	Algèria	boughazi.hichem@yahoo.fr	
Participant	Mr	Roger	Casals	ES	18/05/1988	Male	Geometría		ICMAT/CSIC Madrid		C/Nicolás Cabrera, n. 13--15	28049	Madrid	España	casals.roger@gmail.com	
Speaker	Mr	Christian	Duval	Francia		Male			Christian Duval					FR	christian.duval@cpt.univ-mrs.fr	
Participant	Mr	Christophe	Wacheux	GE	20/07/1985	Male	CAG		École Polytechnique Fédérale de		Lausanne	1015	Lausanne	Suiza	christophe.wacheux@univ-rennes1.fr	
Participant	Mr	Cheikh	Khoule	SN	10/10/1976	Male	Département de Mathématiqu		Université Cheikh Anta Diop		Avenue Cheikh Anta Diop	1142	Dakar	Senegal	chthioune@yahoo.fr	
Participant	Mr	Nicola	Ciccoli	IT	10/05/1967	Male	Dipartiimento di Matematica e		Nicola Ciccoli		Via Vanvitelli 1	06123	Perugia	Italia	ciccoli@dmi.unipg.it	
Participant	Mr	David	Dowell	UK	29/09/1960	Male	Mathematics		University of Loughborough		487	LE11 4EU	Loughborough	United King	d.m.dowell@lboro.ac.uk	
Participant	Mr	abdelhamid	mohammed c	AL	26/09/1982	Male	mathematics		Université Hassiba Benbouali de		Hay Salem, route nationale N°	02000	Chlef	Argelia	djaouti_abdelhamid@yahoo.fr	
Speaker	Mr	Daniel	Peralta Salas			Male			ICMAT/CSIC Madrid		C. Serrano 123	28006	Madrid	ES	dperalta@icmat.es	
Participant	Mrs	Chiara	Esposito	IT	01/05/1982	Female	Mathematics		Mathematisches Forschungsinsti		Building C	08193	Bellaterra	Italia	esposito.chiar@gmail.com	
Convenor	Mrs	Eva	Miranda	Españ	28/08/1973	Female	Departament de MA1		Universitat Politècnica de Catalu		Avgda Doctor Marañón	08028	Barcelona	ES	evamirandagalceran@gmail.com	
Participant	Mr	Florent	Balacheff	FR	30/12/1977	Male	Mathematics		Université de Lille 1		Cité Scientifique	F- 59655	Villeneuve d'Ascq Cedex	Francia	florent.balacheff@math.univ-lille1.fr	
Convenor	Mr	Francisco	Presas	Españ	04/09/1974	Male			Instituto de Ciencias Matemática		c/ Nicolás Cabrera 13-15	28049	Madrid	ES	fpresas@icmat.es	
Participant	Mr	Pedro	Frejlich			Male			University Utrecht		P.O Box 80125	3508 TC	Utrecht	NL	frejlich@gmail.com	
Participant	Mr	Riccardo	Giachetti	IT	23/02/1949	Male	Physics		Università degli Studi di Firenze		P.zza S.Marco, 4	50121	Firenze	Italia	giachetti@fi.infn.it	
Participant	Mr	Glenier	Lázaro Bello I	ES	17/12/1991	Male			Universidad de Zaragoza		Pedro Cerbuna, 12	50009	Zaragoza	España	gl.bello.burguet@gmail.com	
Participant	Mr	Tamás	Ferenc Görbe	HU	20/04/1989	Male	Department of Theoretical Ph		University of Szeged		Dugonics ter. 13	H-6720	Szeged	Hungría	gorbe.tamas.ferenc@stud.u-szeged.hu	
Participant	Mr	Bela	Gabor Puszta	HU	21/01/1977	Male			University of Szeged		Dugonics ter. 13	H-6720	Szeged	Hungría	gpusztai@math.u-szeged.hu	
Speaker	Mr	Sergei	Gukov			Male			California Institut of Technology		1200 East California Boulevard	91125	Pasadena	US	gukov@theory.caltech.edu	
Participant	Mr	Jérémy	Haut	BE	24/10/1989	Male	IRMP		Université catholique de Louvair		1, Place de l'Université	B-1348	Louvain-la-Neuve	Bélgica	haut.jeremy@gmail.com	
Participant	Mr	Hector	Castejon Diaz	ES	13/03/1988	Male	Mathematics Research Unit		University of Luxembourg		6, rue Coudenhove-Kalergi	L-1359	Luxembourg		hector.castejon@uni.lu	
Participant	Mr	Hugo	Parlier			Male			University of Fribourg		Chemin du Musée 23	CH-1700	Fribourg Pérolles		hugo.parlier@gmail.com	
Participant	Mrs	Ingrid	Meza Sarmier	CO	15/10/1985	Female	SMA		Universidade de São Paulo		Av. Trabalhador são-carlense,	13566-590	São Carlos	Brasil	isofia1015@gmail.com	
Participant	Mr	Jonathan	Weitsman			Male			Northeastern University			MA 02115	Boston		j.weitsman@neu.edu	
Speaker	Mr	Jacques-Arthur	Weil			Male									jacques-arthur.weil@unilim.fr	
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