

XVI International Congress
on Mathematical Physics

ESF-ITGP Grant Report

Summary

Grant: Geometrically Oriented Activities within the 16th International Congress on Mathematical Physics, Prague, August 2009

Granting Organization: European Science Foundation – the programme *Interactions of Low-Dimensional Topology and Geometry with Mathematical Physics (ITGP)*

Grant Sum: EUR 5000

The way of using the money:

The grant was awarded in order to support geometrically oriented activities within the 16th International Congress on Mathematical Physics (ICMP). The meeting which is the biggest conference in the field held regularly every three years took place in Prague in the beginning of August 2009 being well attended – the list of registered participants contains 618 names of participants coming from 49 countries.

The organizers used the grant money to support partially 13 speaker, four plenary and nine in topical sessions. We choose them with the eye on a geometric component in their talks. Judging from the audiences reactions, the supported lectures were met with interest by the audiences and found inspirative, hence we are convinced that the money was used appropriately. We also ask thereby the ESF for providing the remaining 20% of the grant which according to the conditions should be given after the meeting is over and the report is filled.

Prague, October 5, 2009

Pavel Exner
ICMP convener

General Information about the Congress

The triennial International Congress on Mathematical Physics (ICMP) is the main meeting for the mathematical physics community worldwide. The first one met in Moscow 1972 and since the foundation of the International Association of Mathematical Physics (IAMP) in 1976 it is under its aegis. The congress is vital for the cohesion of the field and serves as an important source of inspiration beyond the narrow disciplinary borders. Successful ICMP's managed to give a significant boost to the field.

The ICMP in Prague convened on *August 3–8, 2009*, being traditionally preceded by Young Researcher Symposium on July 31 – August 1. The congress venue was the Clarion Congress Hotel. Despite the fact that many mathematical physicists were unable to attend as the result of the economical crisis and the corresponding restrictions imposed by their institutes, the number of registered participants was 618 making the congress the third largest in history. More participants data are given below.

The programme covered all branches of mathematical physics. We present here a programme summary, a detailed list of all the speakers with the talk titles and abstracts is posted at the page <http://www.icmp09.com/>. The main components were plenary talks, topical sessions with invited and contributed talks, poster sessions, plus several other scientific activities. The one-hour plenary talks were delivered by

Vladimir Bazhanov (*Australian National University, Canberra*)

Demetrios Christodoulou (*ETH Zurich*)

László Erdős (*Ludwig-Maximilian Universität München*)

Bertrand Duplantier (*CEA Saclay*)

Alice Guionnet (*Ecole Normale Supérieure de Lyon*)

Philip Holmes (*Princeton University*)

David Kosower (*CEA Saclay*)

Roberto Longo (*Università di Roma "Tor Vergata"*)

Jens Marklof (*University of Bristol*)

Vieri Mastropietro (*Università di Roma "Tor Vergata"*)

Alessandro Pizzo (*University of California Davis*)

Petr Šeba (*Czech Academy of Sciences*)

Robert Seiringer (*Princeton University*)
Sylvia Serfaty (*Courant Institute*)
Samson Shatashvili (*Trinity College Dublin*)
Steven Weinberg (*University of Texas, Austin*)

The second key element were topical sections organized by persons appointed by the International Scientific Committee:

MECHANICS AND DYNAMICAL SYSTEMS (INCLUDING INTEGRABLE SYSTEMS AND HAMILTONIAN STABILITY)
Organizers: Igor Krichever (*Columbia University*) and Lai-Sang Young (*Courant Institute*)

EQUILIBRIUM STATISTICAL MECHANICS (CLASSICAL AND QUANTUM)
Organizers: Marek Biskup (*UCLA*) and David Brydges (*University of British Columbia*)

NON-EQUILIBRIUM STATISTICAL MECHANICS (INCLUDING STOCHASTIC EVOLUTIONS EXCEPT SLE AND BOLTZMANN EQUATION)
Organizers: Herbert Spohn (*TU München*) and Horng-Tzer Yau (*Harvard University*)

PDE'S (FLUID DYNAMICS, WAVE EQUATION AND NLSE, BOLTZMANN EQUATION, GENERAL RELATIVITY, AND ELASTICITY)
Organizers: Sergiu Klainerman (*Princeton University*) and Grigory Seregin (*Steklov Institute Sankt Petersburg*)

PROBABILITY THEORY (INCLUDING RANDOM MATRICES AND SLE)
Organizers: Yuval Peres (*UC Berkeley*) and Wendelin Werner (*Université Paris-Sud, Orsay*)

OPERATOR ALGEBRAS (INCLUDING NONCOMMUTATIVE GEOMETRY)
Organizers: Detlev Buchholz (*Universität Göttingen*) and Masaki Izumi (*Kyoto University*)

NONRELATIVISTIC QUANTUM MECHANICS (INCLUDING QUANTUM INFORMATION)
Organizers: Nilanjana Datta (*Cambridge University*) and Peter Kuchment (*Texas A&M University*)

STRING THEORY AND QUANTUM GRAVITY

Organizers: Gary Gibbons (*Trinity College, Cambridge*) and Hermann Nicolai (*Max-Planck-Institut für Gravitationsphysik, Potsdam*)

QUANTUM FIELD THEORY (INCLUDING FIELD THEORETIC METHODS
IN CONDENSED MATTER)

Organizers: Krzysztof Gawedzki (*ENS Lyon*) and Manfred Salmhofer (*Max-Planck-Institut für Mathematik, Leipzig*)

MANY-BODY QUANTUM MECHANICS (CONDENSED MATTER,
NANOSCALE, ELASTICITY)

Organizers: Gian Michele Graf (*ETH Zurich*) and Jakob Yngvason (*Universität Wien*)

NEW FRONTIERS IN MATHEMATICAL PHYSICS

Organizers: Joseph Avron (*Technion, Haifa*), Ruth Durrer (*Université de Genève*), and Israel Michael Sigal (*University of Toronto*)

The number of invited talks ranged between four and eight, their length between 30 and 45 minutes, the total number of them was 70. In addition to that there were about 60 shorter contributed talks selected by the session organizers for the proposals of the participants. Finally, about 180 contributions were presented as posters. Taken together, these numbers mean that a majority of participants was given opportunity to present their results at the congress.

An important component of the congress was the round table session under the title “Mathematical Physics: Future Challenges” moderated by Joel Lebowitz (Rutgers) which opened by plenary lectures by

Michael Berry (*Bristol*)

Stanislas Leibler (*Rockefeller University*)

Leonard Susskind (*Stanford*)

followed by a lively discussion generally regarded as useful and inspirational.

At the Young Researcher Symposium mentioned above the plenary talks were given by the following speakers:

Rafael Benguria (*P. Universidad Católica de Chile*)

Anna De Masi (*Universita di L'Aquila*)

Helmut Hofer (*Courant Institute*)

Yakov Sinai (*Princeton*)

Wei-Min Wang (*Université Paris-Sud, Orsay*)

Reinhard Werner (*TU Braunschweig*)

In addition, there were 23 seminar talks by the young participants, each lasting 25 minutes.

Budget summary

While the budget report of the grant in question given below is detailed, the total figures are preliminary only because at the time of this report the congress budget is not closed. This will be done only after the congress proceedings are edited, paid and mailed to the participants – which is expected to happen in the spring of 2010. Another factor which influences the budget is that it was done in Czech currency, and payments in Euros at different dates were converted due to actual exchange rate which fluctuated several percent during the whole accounting period.

Nevertheless, the budget is expected to be balanced with the income and expenses about 290 thousand Euro. The main part of the income, about 212 thousand euro came from the registration fees, 56 thousand from sponsor support and 22 thousand from publisher exhibitions. It is necessary to say, however, that the overall sponsor support was much higher, about 123 thousand Euro, more than a half of it was either given to the participants directly (in case of the NSF and DFG grants) or used by the organizers to cover the participant registration.

The expenses covered mostly premises rental with the appropriate AV equipment, exhibition and poster stands, catering, congress material purchase and printing, databases, and the remuneration of our professional partner, Congress Business travel, Ltd.

The specific use of the grant

The grant was designed to support geometrically oriented activities, both in plenary session and in topical sessions, primarily “String Theory and Quantum Gravity”, also “Quantum Field Theory” and “Dynamical Systems”. We

tried to fulfill this goal as much possible, given the constraints coming from speaker eligibility based on the country of his/her affiliation. Altogether we supported partially 13 speakers, about two thirds of the money being used to pay the registration, other contributions went to travel and lodging, and in three cases we paid the congress dinner. A detailed account is presented in the table below.

<i>Name</i>	<i>Cong. fee</i>	<i>Dinner</i>	<i>Transport</i>	<i>Lodging</i>	<i>Total</i>
Demetrios Christodoulou	260	0	0	0	260
Bertrand Duplantier	300	50	442	0	792
Alice Guionnet	300	50	297	0	647
Mihalis Dafermos	300	0	0	0	300
Grégory Miermont	300	0	0	0	300
Gregory Korchemsky	300	0	0	0	300
Ingo Runkel	300	0	0	0	300
Hennig Samtleben	0	0	0	199	199
James Sparks	0	0	0	199	199
Michael Mueger	0	0	0	278	278
Samson Shatashvili	300	50	296	0	646
Sergei Kuksin	300	0	0	238	538
Domokos Szasz	260	0	0	0	260
<i>Total</i>	2920	150	1035	914	5019

We note that the lectures of the supported speakers got appraisal and as a rule stimulated lively discussions. Given the high level of the congress generally and the reaction of the participants we have no doubts that the goal to encourage geometrically oriented activities in the field of mathematical physics was achieved.

Participation statistics

Out of the 618 participants, 76 were women which makes cca 12%. The same was the ratio among the plenary speakers, 2 out of 16. In the invited session talks it was 7 out of 70, among the YRS plenary speakers 2 out of 6.

No data are directly available for an age statistics, however, in the naked-eye view the congress attracted large numbers of young people, both among the speakers and among the other participants. As for the geographical

distribution, people from 49 countries took part; the distribution according to affiliation is the following:

<i>Country</i>	<i>Participants</i>
Czech Republic	79
USA	77
Germany	68
France	48
UK	38
Japan	30
Italy	28
Russia	24
Poland	21
Switzerland	20
Spain	17
Israel	14
Denmark	11
Ukraine	11
Mexico	10
Austria	9
Brazil	8
Canada	8
Portugal	8
Romania	8
Finland	7
Belgium	6
Turkey	6
Hungary	5
Chile	5
Ireland	5
Netherlands	5
South Korea	5
China	4
Australia	3
Bulgaria	3
Thailand	3

and furthermore, *two* participants from Belarus, Bosnia-Herzegovina, Greece,

Hong Kong, India, Norway and Sweden, and a *single* one from Armenia, Benin, Cyprus, Egypt, Georgia, Morocco, Pakistan, Singapore, Slovakia and South Africa

List of participants

The full list of registered participants with the countries they came from is available at web page <http://www.icmp09.com/registered-participants>