

Doppler Institute

for Mathematical Physics and Applied Mathematics

2012 Activity Report

This is a short overview of the DI activities; a list of publications is given in the attachment. The full account covering all aspects of the work done can be found at the DI web page, <http://doppler.ujf.cas.cz/index.html>

People

1. *Permanent staff* consisted of 16 members the salaries of whom were payed by the three participating institutions, CTU (Exner–*part*, Havlíček, Jex, Masáková, Pelantová, Šťovíček, Tolar, Chadzitaskos, Pošta), NPI (Exner–*part*, Znojil, Dittrich, Krejčířík, Tater) and UHK (Šeba, Kříž, Jezbera).
2. *Temporary positions* covered by various grant and institutional sources were given to postdocs, specifically to Gábris, Hamilton, and Barseghyan.
3. *Students*: the DI members supervised PhD theses preparation of 14 students, of which 12 were based at the CTU, one in the NPI and one at the UHK; a part of the theses was prepared in collaboration with institutes abroad. In addition, some number of undergraduate students was supervised.
4. *Degrees obtained*: Štěpán Starosta defended in April *PhD thesis* “Rauzy graph automorphisms and their applications” written under supervision

of E. Pelantová. David Krejčířík obtained in November a DSc degree after defending the thesis “Geometrically induced spectral properties of physical systems”

5. *Visitors*: About 27 people visited DI from abroad for collaboration purposes, typically with a talk given at one of the DI seminars.

Publications

1. *Non-journal publications*: two edited volumes of conference proceedings, one book chapter, and one patent.
2. *Research papers*: there were 42 journal papers published, of which 25 of this year while 17 were accepted earlier and published in 2012 (or at the very end of 2011). In addition there were eight papers accepted; a full list is attached. Highlights among the 42 journal publications are papers in *Science*, *Commun. Math. Phys.* and *Phys. Rev. Lett.*; further there are ten papers in *J. Phys. A: Math. Theor.*, four in *Integral Eq. Operator Theory*, two in *Kybernetika*, *Phys. Rev. D*, *Phys. Lett. A* and *RAIRO*, plus single papers in *Ann. H. Poincaré*, *Ann. Phys.*, *Asympt. Anal.*, *Eur. J. Phys. D*, *J. Math. Phys.*, *Phys. Rev. A*, *Phys. Lett. B*, *Rev. Math. Phys.*, *Theor. Comput. Sci.* and eight other journals. There were also two edited volumes, one book chapter, and one patent.
3. *Submitted papers and proceedings contributions*: 29 items, see the attached list

Meetings

1. Spring school and workshop *Combinatorics on words*, Sv. Jan pod skálou, May 13–18, 2012; about 22 participants
2. Microconference *Analytic and algebraic methods in physics X*, Prague, June 4–7, 2012; about 40 participants from 11 countries and 26 talks
3. Conference *Operator Theory, Analysis and Mathematical Physics (OTAMP 2012)*, Barcelona, June 11–14, 2012; D. Krejčířík as coorganizer, DI supported eight participants
4. *First Czech-Slovak MELA*, a meeting on languages, Telč, September 28–30, 2012; about 33 participant, 22 talks

Seminars

Four regular seminars worked:

1. *Doppler Institute Seminar*, 13 sessions in 2012
2. *Quantum Circle Seminar*, 14 sessions apart from the workshops
3. *Combinatorial and Algebraic Structures Seminar*, 24 sessions apart from the workshops
4. A *microseminar* on quantum theory and related topics and methods, 7 sessions

Prague, December 28, 2012



Pavel Exner
DI Scientific Director