

Doppler Institute

for Mathematical Physics and Applied Mathematics

2013 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, in particular Gábris and Hamilton as in the previous year; newly four postdoc positions sponsored by an EU Operational Programme were given to Háková, Manko, Minakov, and Ohya.
3. *Students*: the DI members supervised PhD studies of 13 students, of which 12 were based at the CTU and one in the NPI; a part of the theses was prepared in collaboration with institutes abroad. In addition, some number of undergraduate students was supervised.

4. *Degrees obtained:* Václav Potoček defended in January *PhD thesis* entitled “Optical implementation of quantum walks” written under supervision of I. Jex. In February, Tomáš Kalvoda defended *PhD thesis* “Time-dependent classical dynamical systems” written under supervision of P. Šťovíček, and finally, Filip Studnička defended in November *PhD thesis* “Analysis of biomedical signals acquired by ballistocardiographic measurements” written under supervision of P. Šeba.
5. *Visitors:* About 35 people visited DI from abroad for collaboration purposes, typically with a talk given at one of the DI seminars.

Publications

1. *Non-journal publications:* an edited volume, one book chapter, and one patent.
2. *Research papers:* there were 36 journal papers published, of which 32 of this year while four were accepted earlier and published in 2013 (or at the very end of 2012). In addition there were 13 papers accepted; a full list is attached. Highlights among the 36 journal publications are papers in *Commun. Math. Phys.* and *New J. Phys.*; further there are two papers in *Ann. Phys.*, *Int. J. Theor. Phys.*, *J. Math. Phys.* and *J. Phys. A: Math. Theor.*, and single papers in *Discr. Math.*, *Fortschr. Phys.*, *JHEP*, *J. Phys.: Cond. Mat.*, *J. Spectral Theory*, *Phys. Rev. D*, *Publ. RIMS*, *Theor. Comp. Sci.* and nine other journals. Eight papers appeared in *Acta Polytechnica*, mostly in connection with an issue celebrating 75th birthday of Miloslav Havlíček.
3. *Submitted papers and proceedings contributions:* 25 items, see the attached list

Meetings

1. Workshop *Mathematical aspects of the physics with non-self-adjoint operators*, Edinburgh, March 11–15, 2013; about 35 participants from 10 countries, 19 talks
2. Student conference on *Combinatorics on Words and Mathematical Physics*, Dolní Lomná, May 19–25, 2013; about 30 participants
3. Conference *Symmetries of Discrete Systems and processes*, Děčín, July 15–19, 2013; about 30 participants from 7 countries, 27 talks

4. *Second Czech-Slovak MELA*, a meeting on languages, Telč, September 7–10, 2013; about 33 participants, 22 talks
5. Microconference *Analytic and algebraic methods in physics XI*, Prague, October 30 – November 1, 2013; about 40 participants from 13 countries and 27 talks
6. Microconference *Analytic and algebraic methods in physics XII – to celebrate 75 birthday of Professor Miloslav Havlíček*, Prague, November 2, 2013; about 35 participants, 13 talks

Seminars

Four regular seminars worked:

1. *Doppler Institute Seminar*, 13 sessions in 2013
2. *Quantum Circle Seminar*, 12 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, 8 sessions

Prague, December 31, 2013



Pavel Exner
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