

Doppler Institute

for Mathematical Physics and Applied Mathematics

2014 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, institutional, and European sources were given to postdocs, all continued from the previous year; Gábris, Háková, Hamilton, Manko, Minakov, and Ohya.
3. *Students*: the DI members supervised PhD studies of 13 students, of which 10 were based at the CTU and three in the NPI; a part of the theses was prepared in collaboration with institutes abroad. In addition, a number of undergraduate students were supervised.
4. *Degrees obtained*: František Štampach defended in September *PhD thesis* entitled “Spectral analysis of Jacobi matrices and related problems”

written under supervision of P. Šťovíček. In the same month, *Daniel Dombek* defended *PhD thesis* “Numeration systems with negative basis” written under supervision of Z. Masáková.

5. *Awards*: Václav Potoček received *Siemens Prize* in the competition for best PhD thesis. David Krejčířík was awarded the *Neuron Prize* for the best young scientist in mathematics.
6. *Visitors*: About 30 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, two book chapters.
2. *Research papers*: there were 52 journal papers published, of which 35 of this year while 17 were accepted earlier and published in 2014. In addition there were 10 papers accepted; a full list is attached. Highlights among the journal publications are papers in *Commun. Math. Phys.* and *Phys. Rev. Lett.*; further there are six papers in *J. Math. Phys.*, five in *J. Phys. A: Math. Theor.*, three in *Theor. Comp. Sci.*, two in *Ann. H. Poincaré*, *Ann. Phys.*, *Acta Polytechnica*, *Int. J. Theor. Phys.*, *J. Phys.: Conf. Ser.*, *Math. Bohemica*, and *Int. J. Circ. Syst. Signal Proc.*, and single papers in *Comm. PDE*, *Int. Eq. Oper. Theory*, *J. Math. Anal. Appl.*, *J. Phys. B*, *J. Spect. Theory*, *Lett. Math. Phys.*, *Phys. Lett. A*, *Phys. Rev. A*, *Portugal. Math.*, *RAIRO*, and eleven other journals.
3. *Submitted papers and proceedings contributions*: altogether 28 items, see the attached list

Meetings

1. 23th *Student Winter School on Mathematical Physics*, Janské Lázně, January 26 – February 1, 2014; about 40 participants from four countries, 31 talks
2. *Third Czecho-Slovak MELA*, a meeting on languages, Telč, September 13–15, 2014; about 33 participants, 21 talks

Seminars

Four regular seminars worked:

1. *Doppler Institute Seminar*, 8 sessions in 2014
2. *Quantum Circle Seminar*, 16 sessions apart from the workshops
3. *Combinatorial and Algebraic Structures Seminar*, 23 sessions apart from the workshops
4. A *microseminar* on quantum theory and related topics and methods, 2 sessions

Václav Votruba Prize

In the twelfth year of competition for the best PhD thesis in theoretical physics the award went to *Nicolai Friis* from IQQI Innsbruck for the work *Cavity mode entanglement in relativistic quantum information*. The jury also gave a honourable mention to *Lucie Augustovičová* for the work *Quantum dynamics of small molecules*.

Prague, December 29, 2014



Pavel Exner
DI Scientific Director