

Doppler Institute

for Mathematical Physics and Applied Mathematics

2006 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 17 members the salaries of whom were payed by the three participating institutions, CTU (Exner-part, Burdík, Havlíček, Jex, Pelantová, Štoviček, Tolar, Chadzitaskos, Pošta, Svoboda), NPI (Exner-part, Znojil, Dittrich, Krejčířík, Tater) and UHK (Šeba, Kříž, Martiník) and two supported by the DI grant LC06002 (Masáková, Soldán)
2. *Temporary positions* covered by the DI grant LC06002 were given to postdocs, exceptionally to PhD students, specifically the *long-term ones* (six months or more, possibly extending to the next year) to Ambrož, Fülöp, Jakubský, Krbálek, Šnobl, Turek, and *short-term ones* to Brauner, Jizba, Kleefeld, Kochan, Kondej, Lavička and J. Novotný.
3. *Students*: the DI members supervised PhD theses preparation of 24 students, of which 20 were registered at the CTU (in two cases simultaneously with NPI), 4 at the NPI and 2 at the UHK. In addition, some number of undergraduate students was supervised
4. *Degrees obtained*: Zuzana Masáková got a habilitation based on a treatise entitled "Arithmetic and combinatorial properties of β -integers". Two *PhD theses* were defended: Petr Ambrož: "Arithmetical and combinatorial properties of non-standard numeration systems" (under a common supervision of Christiane Frougny and Edita Pelantová) and Vít Jakubský: "Pseudo-Hermitian quantum mechanics" (supervised by Miloslav Znojil)
5. *Visitors*: About 25 people visited DI from abroad for collaboration purposes, typically with a talk given at one of the DI seminars.

Publications

1. *Research papers, published and accepted*: there are 19 and 11 of them, respectively, of which five in *J. Phys. A: Math. Gen.*, four in *Phys. Rev. A*, three in *Czech. J. Phys.*, two in *Phys. Lett. A*, *Int. Rev. Phys. Chem.*, and *Theor. Comp. Sci.*, and single papers in *Phys. Rev. Lett.*, *J. Math. Phys.*, *Integral Eq. Operator Theory*, *RAIRO*, *Arch. Rat. Mech. Anal.*, etc.; see the attached list
2. *Submitted papers and proceedings contributions*: 24 items, see the attached list
3. *A popular book*: Igor Jex published a book about Ludwig Boltzmann

Meetings

1. Workshop *Spectra, Algorithms and Data Analysis*, Hradec Králové, February 28 – March 1, 2006; about 25 participants from DI and University of Zielona Gora
2. Conference *Operator Theory in Quantum Physics*, Prague, September 9–14, 2006; about 80 participants from 18 countries
3. Workshop *Spectra, Algorithms and Data Analysis II*, Hradec Králové, December 7–8, 2006; about 30 participants from DI and Universities of Zielona Gora and Wroclaw

Seminars

Four regular seminars worked:

1. *Doppler Institute Seminar*, 11 sessions in 2006
2. *Quantum Circle Seminar*, 13 sessions apart of the workshops
3. *Combinatorial and Algebraic Structures Seminar*, 19 sessions
4. A microseminar on *PT Symmetries*, 26 sessions

DI Council Activity

1. *Informal meeting* of the Council was held during the September OTQP conference in Prague attended by Yosi Avron, Pavel Exner, Roman Kotecký, Ari Laptev, Edita Pelantová, Petr Šeba and Miloslav Znojil, during which the DI strategy was discussed
2. *Discussions* with other Council members occurred on *ad hoc* basis
3. *The present report* was discussed and approved electronically

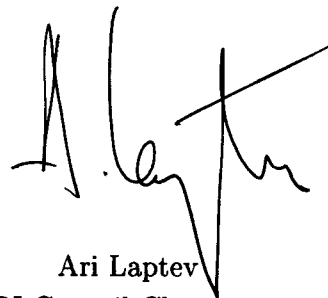
Other important facts

1. *The next ICMP*: International Association of Mathematical Physics choose Prague as *the site of its next congress* in the summer of 2009. The bid was made, of course, on behalf of the whole Czech mathematical-physics community, but the DI will for sure play an important role in the ICMP organization and must adjust its work program accordingly
2. *Václav Votruba Prize*: the DI supports this award for the best PhD thesis in theoretical physics, sponsored by the *Foundation for Support of Theoretical Physics*. This year prize went to *Michal Malínský* for the work entitled "Quark and lepton masses and mixing in supersymmetric grand unified theories".

Signed in Prague and London on January 9, 2007



Pavel Exner
DI Scientific Director



Ari Laptev
DI Council Chairman