

Victor Ivrii' Vita

Victor Ivrii

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1 General

- ★ Date of birth 01.10.1949
- ★ Place of birth Sovetsk, USSR (Russia)
- ★ Citizenship: Canadian
- ★ Martial status Married, 2 children (32 and 21 years old),
1 grandchild (1.5 years old)
- ★ Present address:
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- ★ Present position:
 - ☆ Professor of Department of Mathematics,
 - ☆ Member of the School of Graduate Studies,
 - ☆ University of Toronto (from July 1992)
- ★ Administrative duties:
 - ☆ Served as Associate Chair (July 1994 - June 97)
 - ☆ Served in many Committees



2 Education and Degrees

- ★ 1982 Doctor of Physical and Mathematical Sciences of Leningrad Department of Mathematical Institute; validated by VAK (Supreme Attestation Commission) in 09.1983 (Second Doctor Degree; corresponds to Docteur d'Etat in French standards).
- ★ 1973 Candidate(=PhD degree in Western standards) of Physical and Mathematical Sciences of Novosibirsk State University; supervisor S.L.Sobolev (the Great Sobolev).
- ★ 1970-1973 Graduate student of Mathematical Department of Novosibirsk State University; supervisor S.L.Sobolev.
- ★ 1970 Diploma of Mathematical Department of Novosibirsk State University (University Diploma in Russia corresponds to MS in North America).
- ★ 1965-1970 Undergraduate student of Mathematical Department of Novosibirsk State University (5 years); supervisor S.L.Sobolev.

3 Positions

- ★ From: Jan. 1993 Member of the School of the Graduate Studies, University of Toronto.
- ★ From July 1992 Professor of the Department of Mathematics, University of Toronto.
- ★ Oct. 1990-June 1992 Professeur de Centre de Mathematiques, École Polytechnique, France.
- ★ 1985 Professor' Certificate of VAK (In Russia Docent and Professor are not only positions but also Academician Ranks. Available only for persons with docent or professor positions, candidate or doctor degrees respectively, and with large teaching experience).
- ★ 01.1984-09.1990 Professor of Department of Computer Science and Applied Mathematics of Magnitogorsk Mining and Metallurgical Institute.
- ★ 1977 Docent' Certificate of VAK.
- ★ 09.1983-01.1984 Docent of Department of Computer Science and Applied Mathematics of Magnitogorsk Mining and Metallurgical Institute.
- ★ 06.1975-06.1983 Docent (=Associated Professor) of Department of Mathematics of Magnitogorsk Mining and Metallurgical Institute.
- ★ 06.1973-06.1975 Lecturer (=Assistant Professor) of Department of Mathematics of Magnitogorsk Mining and Metallurgical Institute.

4 Visiting Positions (incomplete list)

- ★ March - July 1999, Visiting Professor (Lady Davies Fellowship) at Department of Mathematics, Technion, Haifa, Israel.
- ★ January 1999, Visiting Professor, Department of Mathematics, University Paris-Sud, Orsay, France.
- ★ Aug. 1991, Visiting Professor, Department of Mathematics of Weizmann Institute of Science, Rehovot, Israel.
- ★ July 1991, Visiting Professor of Department of Mathematics of Bologna University, Bologna, Italy.
- ★ Jan. 1990 Visiting Professor of of Universite Paris-Sud, Orsay, France.
- ★ Nov.-Dec. 1989 Visiting Professor Department of Mathematics of Universite Paris 7, Paris, France.

5 Scientific Activity

- ★ My first paper (1969) was devoted to exponential decay of energy of solutions to wave equations. These results were later reproved in paper of C.Morawetz-J.Ralston-W.Strauss and then recovered again by methods of microlocal analysis.
- ★ *Well-posedness of the Cauchy problem for non-strictly hyperbolic equations* Papers, devoted to this topic were written in 1970-1975; only few small notes were written later in cooperation. First of all I treated the necessary conditions of the C^∞ -well-posedness of the Cauchy problem. The most important my paper devoted to this topic is 9 (1974). Later sufficient conditions were obtained 14 (1975), 26 (1977). As a result of these papers (necessary condition and restricted sufficient condition) and subsequent papers of C.Iwasaki-N.Iwasaki and R.Melrose (full sufficient condition) the complete description of hyperbolic equation such that the Cauchy problem remains to be correct with any lower order terms is known.

The first proof that the hyperbolic (and analytic) Cauchy problem is always well-posed in appropriate Gevrey class was given in 13 (1975). Later this result was generalized and ramified by M.Bronshtein and later by some Japan mathematicians.

Finally necessary and sufficient conditions of the Gevrey well-posedness of the Cauchy problem were treated 21, 22 (1976) and 29 (1978).

- ★ *Propagation of singularities* Main results were obtained in 1976-1980. At this time propagation of singularities was the central problem of PDE. Later I returned to this topic few times. Propagation of singularities inside domain was treated in 34-38 (1979), 43 (1980).

Later propagation of singularities near the boundary was treated 44 (1980), 47 (1981).

These results (apart of their own importance) have been heavily used in my subsequent works and I am still in this business.

- ★ *Spectral asymptotics with accurate remainder estimates* I began my work with precise spectral asymptotics in 1979. I started from the justification of the Weyl conjecture 42 (1980); later the

developed methods were highly improved and generalized and obtained results were published in articles 51 (1982), 55 (1983), 70-71 (1987) and in the book 56 (1984).

In 1986 I invented a new approach which permitted to treat problems with rather special but the most interesting types of singularities (edges, vertices, horns, cusps are rather vague but appropriate terms to describe them). The most important publications are 62-64, 67 (1986) and 88-96, 99 (1990-1992).

- ★ *Scott conjecture for molecules* I and M.Sigal had proven Scott conjecture for molecules 103 (1993).

Later I justified Dirac-Schwinger terms for molecules as well 96 (1992).

I revised preprints (the preliminary version of my book). Due to some new ideas and improved implementation of old ideas pretty accurate remainder estimates were obtained under very weak and general non-degeneracy conditions. This improvement is very important for applications because strong non-degeneracy conditions are not necessarily fulfilled in the problems arising from the physics.

- ★ *MQT* Then I moved seriously to Multiparticle Quantum Theory (MQT) with strong and very strong magnetic field.

- ★ *Back to spectral theory* I derived spectral asymptotics with sharp remainder estimates for Neumann problem for Laplacian in domains with ultra-hin cusps, and similar problems for Maxwell operator.

Then I derived asymptotics with sharp remainder estimates for number of eigenvalues of operator $A - sV$ crossing energy level E as s runs between 0 and t , as t tends to infinity where A is the operator with periodic coefficients (or operator with coefficients periodic with respect to part of variables in the domain, periodic with respect to these variables and bounded with respect the rest of them) and V decays at infinity; E resides either inside of the spectral gap of A or on its edge.

Finally

- ★ *Sharp Spectral Asymptotics for Operators with Irregular Coefficients* In this research I used a rather fresh idea of approximation and sharp spectral asymptotics with remainder which are uniform with respect to the mollification parameter. First I proved the result which is much more general than the following statements

For operators with $C^{1,1}$ coefficients in domain with (approximately) same smoothness of the boundary spectral asymptotics holds with $O(h^{-d+1})$ remainder estimate where $C^{k,s}$ consists of functions with $[k]$ -th derivatives continuous with continuity modulus $r^{k-[k]} |\log r|^{-s}$ with distance r .

Weyl conjecture holds for second order operators with $C^{1,1+}$ coefficients in domains with $C^{1,1+}$ boundary where $+$ means that continuity modulus is o of what it was above. In this case Hamiltonian flow could be multi-valued because of the lack of smoothness.

To understand the ultimate value of this one needs to know that up to date the sharp remainder estimates were proven only for operators with very smooth coefficients (or with singularities of the special type, located on submanifolds with codimension greater than 1) and while for less regular case no sharp remainder estimates were known.

Even for less regular case I managed to recover the following

Theorem For operators with $C^{s,1}$ -coefficients ($0 \leq s < 1$) spectral asymptotics holds with the remainder estimate $O(h^{-d+s})$ for any $s > 0$. This project so far resulted in few articles and many talks. What is far more important - it opened the door to a big development: I am trying to make up most of the results of my monograph for non-smooth case - and I hope that most of the results will stay in original or modified form.

★ *Further Advances*

I continue in the direction of more sophisticated results. Recently I finished paper extending my own results for Schrödinger operator with the strong magnetic field in dimensions 2,3 for operators with $C^{2,1}$ -coefficients and $C^{1,1}$ potentials respectively. Under non-degeneracy conditions I obtained remainder estimates $O(\mu^{-1}h^{-1})$ and $O(h^{-2})$ respectively as $\mu h \leq 1$ and $O(1)$ and $O(\mu h^{-1})$ as $\mu h \geq 1$.

Then I considered multidimensional Schrödinger operator with non-degenerate magnetic field (i.e. rank $F = 2r = d$ where F is a matrix magnetic intensity and under non-degeneracy conditions I derived sharp remainder estimates under weak smoothness conditions.

Next papers were devoted to 2,4-dimensional smooth Schrödinger operator with strong but degenerating (generic) magnetic field.

The most recent papers are devoted to asymptotics of the Dirac energy.

Currently I am on the first 1/2 of my *Mammoth Future Book* ($\approx 2,500$ pp): as of April 15, 2009 it will be 1,080pp <http://weyl.math.toronto.edu/victor/futurebook/futurebook.pdf>

6 List of Research Contributions

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6.1 Addendum II (not covered by Math. Reviews)

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6.2 Other publications

- ★ Working in Magnitogorsk Mining-Metallurgical Institute I published few tiny problem-brochures containing personalized home-works for students (which means that each problem had 30 variants): method of characteristics, Fourier method, integral transformations, variational methods, Green functions, self-similar solutions. All of them gone beyond recovery.

7 Talks

7.1 Talks. I

It is really difficult to recover the list of all my talks when I lived in Soviet Union. There is a list of conferences only:

- ★ Methods of functional analysis in mathematical physics. Third Soviet-Czechoslovak Conf., Novosibirsk, 1971.
- ★ Methods of functional analysis in mathematical physics, Ulan-Ude, 1973.
- ★ I.G.Petrovski All-Union Conf. in Partial Diff. Eq., Moscow State Univ., 1976
- ★ Partial Diff. Eq. Conf. Novosibirsk, 1978
- ★ Intern. Congress of Mathematicians, Helsinki, 1978 Due to exit restrictions from USSR I was not allowed to attend.
- ★ Global Analysis and PDE (?) Conference in East Germany, 1981 (First my visit abroad after a lot of rejections. Due to report submitted by KGB snitch the door was shut again after this conference).
- ★ Microlocal Anal. Boulder, Colo., 1983.
- ★ Partial Diff. Eq. Conf. Novosibirsk, 1983
- ★ Hyperbolic Equat. and Related Topics. Katata/Kyoto, 1984.
- ★ Conference Differ. Eqs. and Appl, Russe (Bulg.), 1985.
- ★ Conference Hyperbolic Equat. Padua, 1985.
- ★ Intern. Congress of Mathematicians, Berkeley, 1986.
- ★ Journées “Equat. aux Deriv. Part., Saint Jean de Monts (June, 1987).
- ★ International Conference “Schrödinger operators”, October 1988, Dubna, USSR.
- ★ PDE and Geometry (?) Conference in East Germany, 1981(The first crack in the iron curtain!)

- ★ Multiple talks at I.G.Petrovski workshops, at I.G.Petrovski seminars, Partial Differential Equation seminars at Moscow University, Partial Differential Equation seminars at Leningrad University and Leningrad Mathematical Institute, Novosibirsk University and Novosibirsk Mathematica Institute. Lecture cycles and talks at Voronezh Winter Math. School, at regular Summer School in Functional Analysis and Math. Physics (Minsk, Novosibirsk, Riga).

7.2 Talks. II

From this time the list is more complete. But some talks in Universite Paris 7, Universite Orsay seem to be absent.

- ★ International Conference “Order, disorder and Chaos in Quantum Systems”, October 1989, Dubna, USSR.
- ★ International Conf. Integral Equat. and Inverse Problem. Varna, Sept. 1989, Bulgaria.
- ★ Seminar talk in Universite de Grenoble, 1989 (The iron curtain fell and I was the first time away from Warsaw Pact countries).
- ★ Seminar talk in Universite de Nantes, 1990.
- ★ Seminar “Equations aux Derivees Partielles”, Ecole Polytechnique, 1990.
- ★ “25 years of Microlocal Analysis”, July 1990, Irsee (Germany).
- ★ International Symposium in Honor S.Agmon, Jerusalem, June, 1990.
- ★ Seminar “Equations aux Derivees Partielles”, Ecole Polytechnique, 1991.
- ★ Mathematical Colloquium, Copenhavn University, 1991.
- ★ Mathematical Colloquium, Lunds University, 1991.
- ★ Mathematical Colloquium, University of Toronto, 1991.
- ★ Summer School in frames of CNRS scientific year “Semi-classical Analysis”, Nantes, June 1991.
- ★ Journees “Equat. aux Deriv. Part., Saint Jean de Monts, June, 1991.
- ★ International Symposium “Operator Calculus and Spectral Theory” at Lambrecht, December 1991.
- ★ Seminar “Analysis semi-classique” Ecole Normale Superiore, January 1992.
- ★ Seminar “Equations aux Derivees Partielles”, Ecole Polytechnique, April 1992.
- ★ Mathematical Physics Year, Mittag-Leffler Inst., The Swedish Royal Acad. of Sci., 1992-93.
- ★ International Symposium on Spectral and Scattering Theory, Sanda (Hyongo) and Kyoto, Nov. 16-26, 1992 Missed due to visa problems: as a result of an error of an ill-performed visa officer from Canadian Consulate in Paris I held one-entry 4 month visa instead of multiple-entry one-year one.

- ★ Talk at Workshop “Schrödinger Operators”, Vienna, Dec. 1993.
- ★ Seminar “Geometry and Analysis”, Northeastern University, Feb. 1994.
- ★ Seminar “Partial Differential Equations”, MIT, Feb. 1994.
- ★ Conference “Differentialgeometrie und Quantumphysik”, Miedzyzdroje (Poland), March 1994.
- ★ Colloquim talk at John Hopkins University, Apr. 1994.
- ★ Seminar in PDE at John Hopkins University, Apr. 1994.
- ★ Colloquim talk at UCLA, Apr. 1994.
- ★ Seminar in PDE, UCLA, Apr. 1994.
- ★ Seminar “Equations aux Derivees Partielles”, Ecole Polytechnique, May 1994.
- ★ Journees “Equat. aux Deriv. Part., Saint Jean de Monts, June, 1994.
- ★ Seminar in PDE at Augsburg University, Germany, June. 1994.
- ★ Conference “Global Analysis and Partial Differential Equations”, Holzau (Germany), July 1994.
- ★ Talk at Workshop “Partial Differential Equations”, Potsdam (Germany), July 1994.
- ★ Seminar at Princeton University, Nov. 1994.
- ★ Colloquim Talk at Bar-Ilan University, Dec 1994.
- ★ Seminar at University of Jerusalem, Dec 1994.
- ★ Colloquim Talk at Technion, Dec 1994.
- ★ Colloquim Talk at Weizmann Inst. of Sci (3 h), Dec 1994.
- ★ International Symposium on Spectral and Scattering Theory, John Hopkins University, Apr 1995.
- ★ Conference “Quasiclassical methods”, Minneappolis, Minnesota, May. 1995.
- ★ Intern. Symposium in PDE. Kashikojima, Japan, Sept 1995.
- ★ Colloquium talk at Univ. of Ottawa, Mar 1996.
- ★ Symposium “Partial Differential Equations and Spectral Theory” Durham, UK, June, 1996
- ★ NATO ASI on Micro-analysis and Spectral Theory, Maratea, Italy, September 96 (skipped due to the poor shape of my Soviet passport at that time).
- ★ Seminar talk at McGill University (October, 1996)
- ★ Seminar talk at Caltech (February, 1997).

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- ★ Seminar talk at UCLA (February, 1997).
 - ★ Seminar talk at Oberwolfach (April 1997)
 - ★ Seminar talk at Weizmann (May 1997)
 - ★ Seminar talk at the Conference at Technion (May 1997)
 - ★ Seminar talk at the Conference at St.Jean-de-Monts (June 1997)
 - ★ Seminar talk at Weizmann (Dec 97)
 - ★ Colloquim talk at Technion (Dec 97)
 - ★ Conference talk at Stockholm (Jan 98)
 - ★ Seminar talk at Courant (Mar 98)
 - ★ Conference talk at Penn. State University (Apr 98)
 - ★ Conference talk in Vienna (June 98)
 - ★ Yet another Conference talk in Vienna (June 98)
 - ★ Conference talk in Praga (June 98)
 - ★ Colloquium talk in Stanford (Feb 99)
 - ★ Seminar talk in Stanford (Feb 99)
 - ★ Seminar talk in Berkeley (Feb 99)
 - ★ Seminar talk at Weizmann Institute of Science, Rehovot, Israel (Apr 99)
 - ★ Colloquium talk at Weizmann Institute of Science, Rehovot, Israel (Apr 99)
 - ★ Colloquium talk at Bar Ilan University, Tel Aviv, Israel (May 99)
 - ★ Colloquium talk at Haifa University, Haifa, Israel (May 99)
 - ★ Colloquium talk at Technion, Haifa, Israel (May 99)
 - ★ Seminar talk at Technion, Haifa, Israel (May 99)
 - ★ Talk at Israel-German Workshop “Spectral and Scattering Theory”, Jerusalem, Israel (May 99)
 - ★ Seminar talk at EDP Conference, St. Jean de Monts, France (June 99)
 - ★ Talk at Workshop “Spectral Geometry”, Technion, Israel (June 99)
 - ★ Talk at Workshop “Coulomb Systemss”, Oberwolfach, Germany (Jul 99)

- ★ Plenary talk at Garding 80-th Birthday Conference, Lundes, Sweden (together with M.Atyah, P.Lax, etc) (Aug 99)
- ★ Session talk, AMS, Salt Lake City (Sep 99)
- ★ Session talk, AMS, Charlotte (Oct 99)
- ★ Seminar talk at City PDE Seminar, POMI, St. Petersburg, Russia (Oct 99)
- ★ Seminar talk at PDE Seminar, POMI, St. Petersburg, Russia (Oct 99)
- ★ Seminar talk at City PDE Seminar, Moscow University, Moscow, Russia (Nov 99)
- ★ Seminar talk at Moscow Mathematical Society, Moscow University, Moscow, Russia (Nov 99)
- ★ Seminar talk at Arnold Seminar, Moscow University, Moscow, Russia (Nov 99)
- ★ Seminar talk at PDE Seminar, Universite de Nantes, Nantes, France (Nov 99)
- ★ Seminar talk at PDE Seminar, Universite de Rennes, Rennes, France (Dec 99)
- ★ Seminar talk at Analysis Seminar, University of Toronto (Jan 00)
- ★ Colloquium talk at McMaster University (Feb 00)
- ★ Colloquium talk at Stanford University (Mar 00)
- ★ Seminar talk at Berkeley University (Mar 00)
- ★ Seminar talk at Independent University, Moscow, Russia (May 00)
- ★ Seminar talk at Institute of Mathematics and Mechanics RAN,
- ★ Seminar talk at “Math 2000” meeting at McMaster University (June 00)
- ★ Colloquium talk at Weizmann Institute (June 00)
- ★ Seminar talk at Euresco conference “Geometry, Analysis and Mathematical Physics: Analysis and Spectral Theory” San Feliu de Guixols, Spain, (Sep 00)
- ★ Seminar talk at Gerard Friedlander Conference (Boston, September 00)
- ★ Seminar talk at Appl. Math. Seminar, University of Toronto
- ★ Tak at Conference “PDE and Mathematical Physics”, Apr 01, Toronto.
- ★ Talk at Workshop “Schrödinger operators” Oberwolfach (May 01)
- ★ Talk at Workshop 2, Programme in Scattering Theory, Erwin Schrödinger Institute, Vienna (May 01)
- ★ Colloquium talk in Weizmann Inst of Sciences (July 01)

- ★ Seminar talk at Weizmann Institute of Sciences (July 01)
- ★ Seminar talk at QMath-8 “Mathematical Results in Quantum Mechanics” Taxco, Mexico, (December 01).
- ★ Seminar talk at conference “Geometric Analysis in XXI century”. MIT (March 02)
- ★ Seminar talk at Grad. Stud. Seminar, Univ. of Toronto (Feb 02)
- ★ 2 Seminar talks at Universite Paris Nord, Villetaneuse (July 2002)
- ★ Talk at Conference “Spectrum and Geometry” at Mittag-Leffler Institute, Djursholm (Aug 2002)
- ★ Seminar talk at Mittag-Leffler Institute, Djursholm (Aug 2002)
- ★ Colloquium talk at Weizmann Institute of Sciences (January 03) ; Seminar talk at Technion, Haifa (January 2003)
- ★ Talk at Workshop “Scattering and Inverse Scattering”, BIRS (March 2003)
- ★ Talk at Workshop “Semi-Classical Methods in Physics and Chemistry”, MSRI (April 2003)

7.3 Talks. III.

- ★ “Sharp spectral asymptotics for magnetic Schrödinger operator”, Workshop on Spectral Geometry, CRM, Montreal, March 4-6, 2004
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in PDE, POMI, St. Petersburg, Russia, October 2003.
- ★ Talk “Sharp spectral asymptotics for operators with irregular coefficients”, Seminar in PDE, POMI, St. Petersburg, Russia, October 2003.
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in PDE, Moscow State University, Moscow, Russia, October 2003.
- ★ Talk “Sharp spectral asymptotics for operators with irregular coefficients”, Colloquium, Moscow Independent University, Moscow, Russia, October 2003.
- ★ “Introduction to Microlocal Analysis”, Graduate Crash Course (9 hours), Moscow Independent University, Moscow, Russia, October 2003.
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in Analysis, Weizmann Institute of Science, Rehovot, Israel, November 2003.
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in Analysis, Technion, Haifa, Israel, November 2003.
- ★ Talk “Everything Started from Weyl”, Graduate Seminar, University of Toronto, December 2003.

- ★ Talk “Sharp spectral asymptotics for operators with irregular coefficients”, Seminar in Appl. Math. & Analysis, University of Toronto & Fields Institute, January 2004.
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in Appl. Math. & Analysis, University of Toronto & Fields Institute, January 2004.
- ★ Talk “Sharp spectral asymptotics for operators with irregular coefficients”, Colloquium, CRM, Montreal, January 2004.
- ★ Talk “Sharp spectral asymptotics for magnetic Schrödinger operator”, Seminar in Analysis, McGill University, January 2004.
- ★ Talk “25 years after”, Atelier sur la theorie semi-classique des fonctions propres et equations aux derivees partielles, June 1-11, 2004, Montreal-Toronto.
- ★ “25 years after”, Spectrum and Quantum Mechanics, SPECT Satellite conference to the 4ECM SPECT and EU IHP network “Analysis and Quantum” KTH, Stockholm, July 3-5, 2004
- ★ “Spectral asymptotics for 2-dimensional Schrödinger operator with strong but degenerating magnetic field”, Technion, Haifa, Israel, December 14, 2004.
- ★ “Spectral asymptotics for 2-dimensional Schrödinger operator with strong but degenerating magnetic field”, Weizmann Inst. Science, Rehovot, Israel, December 20, 2004.
- ★ “Quantize!”, Graduate Students Seminar, September 2004
- ★ “Spectral asymptotics for 2-dimensional Schrödinger operator with strong but degenerating magnetic field”, Applied Math/PDE/Analysis Seminar, University of Toronto, January 24, 2005.
- ★ “Spectral asymptotics for 2-dimensional Schrödinger operator with strong but degenerating magnetic field”, Analysis Seminar, McGill, Montreal, February 17, 2005.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, MIT, September 2006.
- ★ “Everything started from Weyl, North-Eastern University”, September 2006.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, North-Eastern University, September 2006.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, University of Toronto, October 2006.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, KTH, Stockholm, October 2006.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Lunds University, October 2006.
- ★ “Everything started from Weyl”, University of Toronto, November 2006.

- ★ “Everything started from Weyl”, Weizmann Institute of Science, January 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Hebrew University at Jerusalem, January 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Technion, Haifa, January 2007.
- ★ “Everything started from Weyl”, Tel-Aviv University, January 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Weizmann Institute of Science, January 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Kings College, London, UK, February 2007.
- ★ “Everything started from Weyl. I”, École Polytechnique, Palaiseau, March 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, École Polytechnique, Palaiseau, March 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Institut Henry Poincare, Paris, March 2007.
- ★ “Everything started from Weyl. I”, CEA Physique Theoretique, Saclay, France, April 2007.
- ★ “Everything started from Weyl. II”, École Polytechnique, Palaiseau, April 2007.
- ★ “Everything started from Weyl”, Stanford University, Stanford, May 2007.
- ★ “Everything started from Weyl”, Institute of Advanced Studies, University of Bologna, June 2007.
- ★ “Everything started from Weyl. I”, Department of Mathematics, University of Bologna, June 2007.
- ★ “Everything started from Weyl. II”, Department of Mathematics, University of Bologna, July 2007.
- ★ “Magnetic Schrödinger Operator: Geometry, Classical and Quantum Dynamics and Spectral Aymptotics”, Department of Mathematics, University of Bologna, July 2007.
- ★ “Spectral Asymptotics and Dynamics” at Workshop “Spectrum and Dynamics” (CRM, Montreal), April 7-11 (2008)
- ★ “Spectral Asymptotics and Dynamics” (Weizmann Institute of Science), April 29, 2008
- ★ “Spectral Asymptotics and Dynamics” Conference “Thórie Spectrale et Théorie de la diffusion des Systèmes Quantiques Magnetiques”, Luminy, France, July 7-11, 2008.
- ★ “Everything started from Weyl. I, II”, Department of Mathematics, Osaka University, August 2008.

- ★ http://www.msri.org/communications/vmath/VMathVideos/VideoInfo/4031/show_videoSpectral Asymptotics and Dynamics Workshop “Elliptic and Hyperbolic Equations on Singular Spaces”, MSRI, October 31, 2008.
- ★ “Spectral Asymptotics and Dynamics” (Pennsylvania State University), April 29, 2008.

7.4 T_EX Talks

- ★ “e-Articles, e-Books and e-Talks too”, Graduate Students Seminar, February 2004 (and many times in many places, the talk itself and the list are growing and growing and growing)
- ★ “T_EXFreak”, Graduate Students Seminar 2005 (and many times in many places, the talk itself and the list are growing and growing and growing)
- ★ “Beamer All the Way”, Special Seminar 2008.
- ★ “Welcome to TeXLive 2008”, Special Seminar, September 2008.

7.5 Lectures for High-School students

- ★ “Crazy Billiards”, May, 2004
- ★ “What is more and what is less?” October 31, 2004 (and few times repeated)
- ★ Crazy Billiards November 28, 2004 (and few times repeated)

8 Misc

8.1 Memberships

- ★ American Mathematical Society,
- ★ Canadian Mathematical Society,
- ★ International Association of Math. Physics,
- ★ Royal Canadian Society.

8.2 Honors

- ★ Fellow of Royal Canadian Society.
- ★ Lady Davies Fellow (Haifa, 1999)
- ★ Killam Fellow (2002-2004)

8.3 Contribution to the Training of Highly Qualified Personnel

- ★ M.Zaretskaya (PhD 1988; Thesis “Spectral properties of the quadratic Hamiltonians”).
- ★ E.Filippov (Ph.D. 1991; Thesis “Spectral asymptotics of operators in domains with thick cusps”).
Further, two my graduate students achieved quite good results towards their PhD but due to family circumstances Scientific life is pretty hard in Russia, especially for females.
- ★ S.Fedorova-Fainshtein (“Spectral asymptotics for operators with singularities” (1989)).
- ★ A.Kachalkina (“Spectral asymptotics with highly accurate remainder estimates” (1990)).
- ★ PDF Andrew Comech (1997/98) [with Maciej Zworski]
- ★ PDF Emmanuelle Amar-Servat (2003/2004)
- ★ PDF Ivana Alexandrova (2004/2006)

8.4 Editorial Boards

- ★ “Russian Journal of Mathematical Physics” (Russia).

8.5 Organisation of conferences

- ★ I was one of the organizers (with L.Seco, C.Sulem, P.Greiner) of the Annual Seminar of CMS, Toronto, June 95.
- ★ I and M.Zworski organized one-term-long program in Fields Institute. There were three organizers more but their contribution was very modest
- ★ Member of the Program Committee of Third Siberian Congress on Industrial and Applied Mathematics (INPRIM-98) but my contribution was very modest.
- ★ I was one of the section organizers of The International ISAAC'97 Congress but my contribution was very modest.
- ★ I organized (with J.Toth) section PDE of CMS meeting, Ottawa, Dec, 02

8.6 Grants

- ★ Start-up grant (25K, 1992).
- ★ NSERC IGRG 3-181-114-10 (10K, 1992).
- ★ NSERC grant OGP0138277 (32.5K x 3, 1993-96).
- ★ NSERC grant OGP0138277 (30K x 5, 1996-2001).
- ★ NSERC grant OGP0138277 (30K x 4, 2001-2005).
- ★ NSERC grant OGP0138277 (30K x 5, 2005-2010).

8.7 Other

- ★ Refereeing of numerous mathematical journals and publishers, theses and grant/fellowship applications for NSF and NSERC; provided tenure reviews letters of recommendation. Participated (as a Member or as a Chair) few times in the thesis juries.
- ★ Worked as Coordinator (marker) during IMO-95. One of the most exciting experiences I had that year.
- ★ Heavy involvement with International Mathematics Tournament of the Towns and other work with high-school students.
- ★ Associated editor of Mac-TeXWiki<http://mactex-wiki.tug.org/wiki>