

## CURRICILUM VITAE

24 February 2016

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*Birth*           30 September 1945, Tchita, Russia  
*Nationality:*   French (native Russian)  
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### **Scientific degrees:**

1995            French University Professor State Qualification  
1983            Doctor degree (Habilitation) in physical and mathematical sciences  
                    "Superstructures in quasi one- dimensional systems and in liquids"  
                    (Landau Institute for Theoretical Physics, Moscow, Russia)  
1983            Senior Research Scientist degree (Superior Attestation Committee, Russia)  
1972            Candidate degree (Ph. D.) in physical and mathematical sciences  
                    "Electronic properties of semimetals and semiconductors under high magnetic  
                    field", supervisor I.E. Dzyaloshinskii (Landau Institute for Theoretical Physics)  
1969            Master degree "Electronic spectra of crystals under high magnetic fields",  
                    supervisor I.E. Dzyaloshinskii (Moscow Physical Technical Institute)

### **Affiliations:**

Since 1998     Research director, CNRS, France  
1997 – 2000   Consultant of Los Alamos and Brookhaven National Laboratories, USA.  
1972 –1998    carrier at L.D. Landau Institute for Theoretical Physics:

### **Scientific Responsibilities:**

#### **Administration:**

1998 - 2011   Condensed matter group leader, LPTMS, Orsay  
1989 – 1992   Department head of the Landau Institute for Theoretical Physics  
1990 – 1992   Deputy director of the program of Landau Institute at the Institute for the  
Scientific Interchange Foundation, Turin, Italy.  
1990 - 1992   Coordinator of the Euro NETWORK "Frontiers in Condensed Matter Physics".

#### **Expertise:**

2010-2011    Expert council member for ANR program « Retour de post docs », France  
2010   Expert council member for program "Measures to Attract Leading Scientists to  
          Russian Educational Institutions", New Eurasia Foundation, Ministry of education and  
          science of Russia and of Germany.  
1972 - 1982   Expert of the "Institute of Scientific Information", Moscow, Russia.  
Expert of grants for NSF, ANR, RTRA.

#### **Scientific councils member:**

1998 – 2005   LPTMS – CNRS & Univ. Paris-Sud, Orsay, France.  
1988 - 1993   Inst. for Scientific Interchange, Turin, Italy.  
1986 – 1994   Landau Institute for Theoretical Physics, Moscow, Russia.

### **Funding, Grants:**

- 2007-2009 **INTAS**, #05-1000008-7972 (Orsay, Grenoble, Tübingen, Moscou)  
 “Interlayer tunnelling spectroscopy of condensed electronic states with charge, spin and magnetic ordering in layered nano-materials”, responsible of the team of the University Paris-Sud, Orsay.
- 2007-2010 **ANR**, BLAN07-3-192276, (Orsay, Grenoble, Amiens, Moscow)  
 “Local manipulation of collective quantum processes in correlated electronic states”, responsible for the team of LPTMS, Orsay.
- 2008-2010 **RTRA**, Supersolide, with SPEC CEA, Saclay, participant from LPTMS.
- 2002-2004 **INTAS 01-2212** “Electron quantum liquids and quantum solids of reduced dimensionality in molecular organic and inorganic host lattices”.  
 Responsible of the team of the University Paris-Sud, Orsay, France.
- 1993 – 1996 **INTAS** A92-024 responsible at the Institute of Scientific Interchange, Turin, Italy.

### **Editorial**

- since 1988 Editorial board of the Journal “Synthetic metals”, Elsevier.
- 1990 – 1997 Editorial board of the "Journal de Physique".
- 1996 Invited Editor of "Edition de Physique".
- 1975 - 1987 Interpreter of scientific books, « Mir » Publ. House, Moscow, Russia.
- 2013 Co-editor of Proceedings of IMPACT: Eur. Phys. J. Special Topics **222** (2013)
- Since 1993 Co-editor of Proceedings of ECRYS:  
 J. de Phys. IV, **12** (2002) and **131** (2005); Physica B, **404** (2009) and **407** (2012).
- Referee for journals: PRL, PRB, Appl. Phys. Lett., Journ. Appl. Phys., JETP, JETP Lett., Synth. Met., Optical Materials, Solid State Commun., Nature Mat., European Phys. Journ., EPL, Journ. of Phys., Nucl. Phys. B, Physica B, Phys. Lett. A.

### **Organization of the International conferences:**

- 1987 - 1990 Co-organizer of bilateral Symposiums: France-USSR and USA-USSR
- 2012 & 2016 Chairman of the international conference IMPACT 2102 and the school  
 IMPACT 2102 – Electronic States and Phases Induced by Electric or Optical Impacts
- Since 1993 Co-chairman of International Workshops on Electronic Crystals - ECRYS.
- International Advisory or Program Committees Member:*
- 2010 International Conference on Conducting materials, ICOCOM-2010, Tunisia.
- 2009 « Low-Dimensional Metal and Superconducting Systems », Russia.
- 2008 Intern. Conference STRIPES-08, Quantum Phenomena in Complex Matter, Italy.
- 1984-2008 International conferences on Synthetic Metals, ICSM

### **Invited positions**

- Brazil: 2012,2013,2014 - Int. Inst. of Physics - Natal;
- Croatia: 1980 – University of Zagreb
- Denmark: 1976-97 – NORDITA, Copenhagen;
- France: 1992-93 – ILL, Grenoble, 1995, 96, 97 – LPS, LURE, CNRS & University Paris-sud;
- Israel: 1993-94 - Weizmann Institute, Rehovot;
- Italy: 1988-90 – Institute for Scientific Interchange, Turin; 1987,1994 – ICTP, Trieste;
- Japan: 2002, 2012 – Tokyo University; 2003, 2010 – Yukawa Institute, Kyoto; 2015 - OIST
- Russia: 2015-2016 Nat. University of Sci. and Tech. MISiS
- South Korea: 2009 – Seoul Nat. University; 2016 – Inst. for basic research and APCTP
- Switzerland: 1986 – ETH, Zurich
- USA: 1998 - BNL, 1996-2000 – visits to LANL; 1994 – University of California at Santa Barbara; 2007 – James Frank Inst., University of Chicago.

**Teaching experience:**

- 1980 – 1994 Statistical Physics, Landau minimum, at the Graduate school of Landau Institute for Theoretical Physics, Moscow, Russia.
- 2008-2013 Lecture courses at: Seoul National University, University of Tokyo, Federal University of Rio Grande do Norte.
- 2016 Lectures at NUST MISiS, Moscow, Russia

**International schools for young researchers:**

**France:** Cargèse (2009,2012,2016), Les Houches (2001, 1999, 1995); IHP - Paris (1999).

**Italy :** Trento (2003), ICTP - Trieste (2001)

1973-1997 Many schools in the USSR for young researchers:

on theoretical physics, condensed matter physics, low temperature physics, magnetism.  
*Master and PhD students*

1983 – 1992 at the Landau Institute for Theoretical Physics: four PhD students (now, all have permanent research or university positions).

1999 – 2010 three PhD students, two have university positions, one –post doc.

After 1998 Member of several Jury for PhD and Habilitation in France and Switzerland.

**International Meetings:** invited talks - more than 50

**Publications:**

total # of selected original pbs. >170, total number of references >6000, h-index – 36 .

**Best known for:**

Phase transitions: **Brazovskii phase transition** of weak crystallization, nowadays widely used from solid state to cosmology and cold atoms.

Liquid crystals: theoretical prediction and explanation of the “blue phase”.

Low-dimensional electronic systems and applications to properties of synthetic materials – organic metals, chain conductors, conjugated polymers;

Light emitting conducting polymers - **Brazovskii-Kirova model** widely used till nowadays.

Electronic crystals - charge/spin density waves, charge order, ferroelectricity; applications to tunnelling in nanostructures, nonlinear and femtosecond optics.

Pinning and sliding of electronic crystals, plastic flows, applications to space resolved synchrotron radiation studies.

Topological defects in electronic systems: solitons and instantons, topological confinement of charge and spin, dislocations, solitonic lattices and FFLO in superconductors, exact solution for several physically significant many-body problems, recent understanding of solitons (spinons) seen by STM and solitons (holons) in quasi 1D Mott insulators.

Suggestions for electric-field-induced electronic phases and for superconductivity induced by electrostatic doping.

Co-discovery of electronic ferroelectricity (in collaboration with experimentalists at Grenoble and Moscow) and the prediction of the ferroelectricity in conducting polymers.

Ground state reconstruction and spacio-temporal processes in nano-junctions of CDWs including effects of high magnetic fields.

Oscillatory evolution, dynamical phase transition and domains patterns evolution under optical pumping (in collaboration with experimentalists from Ljubljana).

Co-discovery of the hidden phase reached under optical or voltage pilses in a polaronic Mott crystal TaS2 (in collaboration with experimentalists from Ljubljana).

Dynamical phase transitions and self-focusing in evolution of optically pumped ensembles of excitons; applications to neutral-ionic transition.

*The last (underlined) items constitute primary subjects of my current researches.*