CURRICULUM VITAE

Florin Despa
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Education

1997 PhD in Theoretical Physics,
Institute of Atomic Physics, Bucharest, (Romania) & International Center for Theoretical Physics, Trieste (Italy)
Dissertation: *The Theory of the Off-center Diffusion Mechanism*, January 1997

1993 MS in Condensed Matter Physics,
The University of Bucharest

Profesional Experience

Since July 2003 - *instructor of biophysics and biodynamics*
Pritzker School of Medicine, The University of Chicago

May 2000 – June 2003: *research associate in chemical physics and complex systems*
The Department of Chemistry, The University of Chicago

April 1998 – April 2000: *postdoctoral fellow in chemical physics*
Laboratorium voor Vaste-Stoffysica en Magnetisme,
K. U. Leuven (Belgium)

1993 – 1997: *graduate research assistant in theoretical condensed matter physics*
The Department of Theoretical Physics, Institute of Atomic Physics Bucharest and Institute of Physics and Technology of Materials, Bucharest (Romania)
visiting research fellowship
The International Center for Theoretical Physics Trieste (Italy)

Research

Theoretical

A **Diffusion phenomena**
B **Atomic and molecular clusters**
C **Chemical Reactions: dynamics on complex potential surfaces**
D **Biodynamics: kinetic and solvation effects in biological systems**

Experimental

- Thermal conversion of color centers in crystals, colloids;
- Energetics of protein structure. Differential Scanning Calorimetry;
- Cell membrane sealing and assisted protein refolding by multiblock copolymers.

Teaching experience

1993-1997: teaching assistant, The University of Bucharest (Romania) (General Physics, Solid State Theory I)
1998 - 2000: collaborative research projects with graduate students, Laboratorium voor Vaste-Stoffysica en Magnetisme, K. U. Leuven (Belgium)
2000 – 2003 engaging and supervising students in undergraduate/graduate research projects (Berry group, The Chemistry Department at The University of Chicago)
2003 - instructor, Department of Plastic and Reconstructive Surgery, Pritzker School of Medicine, The University of Chicago *(conducting and supervising the students and technicians in the research on the physical chemistry of proteins and cell membranes and the interaction with surfactants)*

Grants, Fellowships

- National Science Foundation (USA) Grant (May 2000-May 2003) for research in Physical Chemistry under supervision of Professor R.S. Berry, The University of Chicago
- Fund for Scientific Research – Flanders (Belgium), F.W.O. (April 1998-April 1999) grant for research on Stability and Structure of Free and Deposited Metallic Clusters under supervision of *Professor R.E. Silverans, K.U. Leuven*
- Fellowship of Research Council of K.U. Leuven (May 1999-May 2000) for research on Stability and Structure of Free and Deposited Metallic Clusters
Host: Professor R.E. Silverans, K.U. Leuven
- Fund for Scientific Research – Flanders (Belgium), F.W.O. (January 2000) three months of visiting fellowship funding for training in *ab initio* quantum chemistry methods
Host: Professor Vlasta Bonacic Koutecky, Humboldt University Berlin (Germany)
- IFA-Bucharest fellowship at The International Center for Theoretical Physics, Trieste; (1994-1997) *Hosts: Professors M. Apostol and N.H. March (ICTP, Trieste)*
- Fund for Scientific Research – Romanian Academy of Science (1994-1997) grant for research in Condensed Matter Physics
- Grant of Ministry of Research and Technology (Romania) (1997-1999) for research project in biology in collaboration with Limburg Universitair Centrum (Belgium)

My References

R. Stephen Berry, *James Franck Distinguished Service Professor*
The University of Chicago; Department of Chemistry
5735 S Ellis Ave. ,Chicago, IL 60637, Phone: 773 702 7021
Fax: 773 702 0805, e-mail: berry@uchicago.edu

Raphael C. Lee, *Professor*
The University of Chicago; Pritzker School of Medicine, MC 6035
5841 S. Maryland Avenue, Chicago, IL, 60637, Phone: 773 702 6302
Fax: 773 702-1634, e-mail: r-lee@uchicago.edu

Joshua Jortner, *Professor Emeritus*
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Roger E. Silverans, *Professor*
Laboratorium voor Vaste-Stoffysica en Magnetisme, Katholieke Universiteit Leuven
Celestijnenlaan 200 D, B-3001 Leuven, België
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Marian Apostol, *Professor*
Department of Theoretical Physics, Institute of Atomic Physics
Magurele-Bucharest MG-6, POBox MG-35, Romania
Phone: 40-1-780 70 40/ 3213, Fax: 40-1-423 17 01
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N.H. March, *Professor Emeritus*
University of Oxford, Oxford, England
Currently at : Universiteit Antwerpen (c/o V.E. van Doren)
Departement Natuurkunde, Groenenborgerlaan 171
2020 Antwerpen, België

a pertinent judgment on my work can be given also by:
Dr. David J. Wales (University Chemical Laboratories, Lensfield Road, Cambridge CB2 1EW, United Kingdom, e-mail: dw34@cam.ac.uk, Telephone: +44 (0)1223 336354, FAX: +44 (0)1223 336362)

Dr. Peter Lievens (Laboratorium voor Vaste-Stoffysica en Magnetisme, Katholieke Universiteit Leuven Celestijnenlaan 200 D, B-3001 Leuven, België, e-mail: peter.lievens@fys.kuleuven.ac.be , tel: + (32) (0) 16327177, fax: + (32) (0) 16327983)

Community Service

Special appointment with Romanian newspapers in order to popularize contemporary scientific achievements:
Fulerena - mingea de carbune; Stiinta si Tehnica, Octombrie (nr. 10) 1997
(Fullerene – the carbon made soccer ball, Science and Technology, No. 10 1997)

Invited Talks

- 1997 Limburg Unversitair Centrum, The Department of Physics, Diepenbeek, Belgium "March model for the fullerene molecule"
- 1998 K.U. Leuven, Laboratorium voor Vaste-Stoffysica en Magnetisme, Leuven, Belgium "Stability of Metallic Clusters: A Progress Report"
- 1999 Humboldt University of Berlin, Walther Nernst Institut, Berlin, Germany "Binnary Metallic Clusters – Theoretical approaches"
- 2000 The University of Chicago, Department of Chemistry, Chicago "Visualization of Coulomb Correlations in Finite Metallic Systems"
- 2003, April 14 Confinement-Induced Colloidal Attractions in Equilibrium: Same Results, Different Interpretations, MRSEC and Department of Physics, The University of Chicago, host T. Witten
- 2003, April 23, "Biological Water" Pritzker School of Medicine, Section of Plastic and Reconstructive Surgery, The University of Chicago, host R.C. Lee
- 2003, September 9, Assisted refolding of HEWL with P188, A calorimetric study, The Molecular Cell Repair Center, host R.C. Lee

Conferences

Invited talks:
- "Inter-Basin Motion on Complex Potential Surfaces"
Grand Vision of Cluster Cartography Participants, Telluride, July 21-28, 2001
- "Calculation of the effective electrostatic potential of binary metallic clusters by a selfconsistent procedure within a discrete approach of the positive background"
Third International Symposium on Theory of Atomic and Molecular Clusters (TAMC3) Berlin, October 5-9, 1999
- "Correlation Effects in Particle Transport Between Embedded Clusters"
Nonlinear Dynamics, Chaotic and Complex Systems, Zakopane, Poland (7- 12 November 1995);

- over 40 contributions (15 oral) at international conferences

Scientific Publications

(A)

1. The Off-Centre Effect on the Diffusion Coefficient Cu+ and Li+ in the KCl Lattice
   F. Despa
   phys. stat. sol. (b) **191** 31 (1995)

2. A Note on Off-Centre Diffusion
   F. Despa and M. Apostol
   Solid State Commun. **94** 153 (1995).

3. Fast Diffusion of the Off-Center Impurities Cu+ and Li+ in the KCl Lattice
   F. Despa and V. Topa
   Radiation Effects and Defects in Solids **137** 299 (1995).

4. The One - Dimensional Model of the Off-Centre Potential of the Fluorine Ion in the NaBr Lattice
   F. Despa
   J. Material Science Lett. **15** 170 (1996).

5. On the Geometrical Factor in the Off-Centre Diffusion
   F. Despa and M. Apostol
   J. Phys. & Chem. Sol. **57** 1231 (1996).

6. The imbalance of the dielectric constant due to the interacting off-centers
   ICTP-Internal Report (19 July 1996);

7. On the Imbalance of the Dielectric Constant of the PbLi_xNb_{3x}Zr_{0.51}Ti_{0.494x}BO_3$ Compound
   F. Despa, E. Dimitriu
   Proceeding of the Electroceramics V Conference, Aveiro - Portugal, 1996

8. Multiple Scattering of EXAFS: Successive Atomic Scattering Versus Lattice Scattering
   F. Despa, M. Apostol and O. Dumitrescu
   Romanian J. of Phys. **41** 233 (1996).

(B)

1. Jellium Corrections on the Critical Condition of Cluster Fission within a Liquid Drop Model
   F. Despa
   Z. Phys. D **37** 347 (1996).

2. Point Ions Approximation within the March Model for the Fullerene Molecule
   F. Despa
   Phys. Rev. **B57** 7335 (1998).

3. A Self-Consistent Solution for Buckminsterfullerene
   F. Despa
   Fullerenes Science and Technology **7** 49 (1999)

4. Stability Effects of Aun Xm+ (X=Cu,Al,Y,In) Clusters
   W. Bouwen, F. Vanhoutte, F. Despa, S. Bouckaert, S. Neukermans, L. Theil Kuhn, H. Weidele, P. Lievens, R.E. Silverans
   Chem. Phys. Lett. **314** 227 (1999)

5. Production of Bimetallic Clusters by a Dual-target Dual-laser Vaporization Source
   W. Bouwen, P. Thoen, F. Vanhoutte, S. Bouckaert, F. Despa, H. Weidele, R.E. Silverans, P. Lievens
   Rev. Sci. Instrum. **71** 54 (2000)

6. On the Ionization Potentials of Binary Clusters LinO and LinC: a Model to Describe the Experimental Results
   F. Despa, P. Lievens, W. Bouwen, F. Vanhoutte, R.E. Silverans
   Eur. Phys. J. D **11** 403 (2000)

7. Two-step Liquid Drop Model for Binary, Metal-rich Clusters
   F. Despa
   Phys. Lett. **A276** 109 (2000)

8. Visualization of Coulomb Correlations in Finite Metallic Systems
   F. Despa and R.S. Berry
   Phys. Chem. Chem. Phys. **4** 3774 (2002)

9. Interpretative Approach to Collective Effects of Electrons in Multicenter Problems
   F. Despa and R.S. Berry
   Eur. Phys. J. D **24** 37 (2003)

10. On the Particles Transport Between Embedded Clusters
F. Despa and V. Topa
Z. Phys. D **38** 65 (1996).

11. Correlation Effects in Particles Transport Between Embedded Clusters
F. Despa
J. Tech. Phys. **37** 481 (1996).

12. On the Ostwald Ripening process
F. Despa and M. Apostol
J. Theor. Phys. **40** 1 (1999).

13. On the proximity relation between two surface-melted clusters involved in inter-cluster mass-transfer
F. Despa and R.S. Berry
Eur. Phys. J. D **16** 261 (2001)

(C)

1. Relaxation dynamics in the presence of unequally spaced attractors along the reaction coordinate
F. Despa and R.S. Berry
Eur. Phys. J. D **16** 55 (2001)

2. Inter-Basin Dynamics on Multidimensional Potential Surfaces.
I. Escape Rates on Complex Basin Surfaces
F. Despa and R.S. Berry
J. Chem. Phys. **115** 8274 (2001)

3. Inter-Basin Dynamics on Multidimensional Potential Surfaces. Kinetic Traps
F. Despa and R.S. Berry
Eur. Phys. J. D **203** 24 (2003)

4. How much are intermediate states worth for competing reactive pathways?
F. Despa and R.S. Berry, J. Chem. Phys. – accepted

5. Metric contributions in reaction rates and their influence on the relaxation efficiency on complex potential energy surfaces
F. Despa and R.S. Berry – in preparation

6. Archetypal Energy Landscapes: Dynamical Diagnosis
F. Despa, D.J. Wales and R.S. Berry – in preparation

(D)

1. Diffusional Model for Growth Factors - Cell Receptors Interaction
   S.-I Despa and F. Despa
   BioSystems **44** 59 (1997).

2. On the Doublet Formation in the Flocculation Process of the Yeast Cells
   S. Stan and F. Despa
   BioSystems **57** 139 (2000)

3. Interbasin Motion Approach to Dynamics of Conformationally Constrained Peptides
   F. Despa, A. Fernández, R. S. Berry, Y. Levy, and J. Jortner
   J. Chem. Phys. **118** 5673 (2003)

4. Interbasin Motion Approach to Dynamics of Conformationally Constrained Peptides
   F. Despa, A. Fernández, R. S. Berry, Y. Levy, and J. Jortner
   Virtual Journal of Biological Physics Research, March 15 (2003)

5. What does "biological water" look like? A description of the hydrophobic hydration
   F. Despa, A. Fernandez and R.S. Berry - submitted

6. Molecular alterations associated with burn injury
   F. Despa, D.P. Orgill, R.C. Lee - submitted

7. Assisted refolding of heat denaturated protein using a multiblock copolymer surfactant
   F. Despa, A.F. Kuo, P. Betala, H. Gissel, R.C. Lee – in preparation

8. Optimum Spin-Echo Time for Magnetic Resonance Imaging of Muscle Electroporation Injury
   F. Despa, J. Cheng, H. Gissel, G. Karczmar, R.C. Lee – in preparation

9. A Study on the Variation of the Magnetic Transverse Relaxation Time Induced by Protein Unfolding
   F. Despa, R.C. Lee and R.S. Berry – in preparation