

Leonor Cruzeiro

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EDUCATION

Technical University of Denmark, Lyngby, Denmark
Ph.D. in Biophysics, 1988.

Gulbenkian Institute of Science, Oeiras, Portugal
Research student, from March, 1981 to April 1982.

University of Lisbon, Portugal
BSc/MSc in Physics, with Distinction, 1981.

PRESENT POSITIONS

Associate Professor com Agregação, Physics Department, FCT, University of Algarve, Campus de Gambelas, 8005-139 Faro, Portugal, since 17 June 2009.

Honorary Research Fellow, Mathematics Department, Heriot-Watt University, Edinburgh, Scotland, UK, since November, 1999.

RESEARCH INTERESTS

Biophysics: Protein folding and function

Solid State Physics: Electrons in Nonlinear lattices

RESEARCH EXPERIENCE

Gulbenkian Institute of Science, Oeiras, Portugal, Research Assistant, from April, 1982 to October 1985.

To investigate passive and active transport across biological membranes.

Birkbeck College, London, UK, Research Fellow at the Department of Crystallography, from October, 1988 to September 1990.

To investigate electron transfer in proteins.

Birkbeck College, London, UK, Research Fellow at the Department of Crystallography, , from October 1990 to September 1993.

To investigate the influence of methylation of DNA bases on the structure and dynamics of DNA.

Birkbeck College, London, UK, BBSRC Advanced Fellow at the Crystallography Department, from October 1993 to September 1998.

To investigate mechanisms for energy transfer in proteins and DNA.

Heriot-Watt University, Edinburgh, Scotland, Research Associate, Mathematics Department, from December 1998 to November 1999.

To investigate interactions of charges with lattice vibrations.

TEACHING POSITIONS

University of Algarve, Faro, Portugal, Assistant Professor, Physics Department, Faculty of Science and Technology, from 17 April 2000 to 16 November 2006.

University of Algarve, Faro, Portugal, Associate Professor, Physics Department, Faculty of Science and Technology, since 17 November 2006.

AWARDS

1993 Advanced Fellowship of the SERC (Science and Engineering Research Council), UK.

Scholarship from the Gulbenkian Foundation, Lisbon, Portugal, to study at the Laboratory of Applied Mathematical Physics, The Technical University of Denmark, Lyngby, Denmark, from January, 1987 to September, 1988.

Scholarship from the Danish Research Council to study at the Laboratory of Applied Mathematical Physics, The Technical University of Denmark, from May, 1986 to December, 1986.

Scholarship from the Danish Government under the Cultural Agreement between Denmark and Portugal to study at the Laboratory of Applied Mathematical Physics, The Technical University of Denmark, Lyngby, Denmark, from October, 1985 to April, 1986.

OTHER PROFESSIONAL ACTIVITIES

Visiting Scientist at the Institute of Biophysics, Krasnoyarsk, Siberia, USSR, August 4-29, 1991.

To investigate the mixed quantum/classical Davydov/Scott model for energy transfer in proteins.

Visiting Scientist at the Department of Physics and Astronomy, Albuquerque, New Mexico, USA, April, 1993.

To investigate a Gibbs approach to the Davydov/Scott model.

Visiting Scientist at Midit, The Technical University of Denmark, Lyngby, Denmark, November, 23 - December 10, 1994.

To investigate functional modes in biological molecules.

Visiting Scientist at Osaka Institute of Technology, Hirakata, Osaka, Japan, October 14 - November 10, 1996.

To investigate the decay of vibrational excitations.

Visiting Scientist at University of Seville, Seville, Spain, May 20 - 26, 2007.

To investigate quantum dynamics at finite temperature.

Visit as Honorary Research Fellow at Heriot-Watt University, Edinburgh, Scotland, UK, June 15 - 22, 2007.

To investigate the Hubbard-Holstein model.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, November 26 - December 1, 2008.

To investigate the sollectron.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, February 3-10, 2009.

To investigate the sollectron and its role in HTSC.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, November 8-12, 2009.

To investigate the dynamical stability of the sollectron.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, February 7-12, 2010.

To investigate electron transfer.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, August 9-13, 2010.

To investigate electron donor to acceptor processes.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, November 20-24, 2010.

To investigate electron in HTSC and other phenomena.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, September 4-16, 2011.

To investigate electron transfer in biomolecules and participate in the Week of Science to celebrate the 70th birthday of Manuel G. Velarde.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, January 29-February 5th, 2012.

To investigate electron transfer in biomolecules and other phenomena.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, April 11-13, 2012.

To investigate electron transfer in biomolecules and other phenomena.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, June 24-29, 2012.

To investigate electron transfer in biomolecules and other phenomena.

Visiting Scientist at Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain, December 5-9, 2012.

To investigate electron transfer in biomolecules and other phenomena.

Visiting Scientist at the School of Mathematics, University of Edinburgh, Scotland, UK, November, 10-23, 2013.

To investigate Hamiltonians that best describe the amide I band of crystalline acetanilide.

Visiting Scientist at the School of Mathematics, University of Edinburgh, Scotland, UK, July, 6-18, 2014.

To investigate Finite temperature energy localisation in crystalline acetanilide.

PROJECTS FUNDED

1993 - 1998 Advanced Fellowship on “Energy Transfer in Proteins and DNA”, approx. £150,000, for 5 years, from SERC.

1993 “Computer Simulations of Energy Transfer in Biomolecules”, £10,000, for 1 year, from BBSRC.

1994 -1996 “Numerical Studies of Energy storage and transport ...”, 1200 Convex CPU hours, for 3 years, from BBSRC.

1995-1996 “Very short timescale energy transfer in proteins”, 250 Cray YMP hours, for 1 year, from BBSRC.

1996 “Spectral signature of the Amide I vibration ...”, 1000 Columbus hours, for 1 year, from EPSRC.

1996 - 1998 “Computer Simulations of sequence induced DNA bending”, 500

Cray J932 hours, for 1 year, from BBSRC.

1997 - 1998 “Spatio-Temporal Coherence in the Solid State ...”, 224,336 ECU, for 1 year, from the European Commission.

1997 “Theories for excited vibrational states in proteins...”, £2260, for 1 month, from BBSRC.

2001 “Thermal stability of electron pairs in the Hubbard-Davydov model”, in collaboration with Professor J.C. Eilbeck, Heriot-Watt University, Edinburgh, ≈ £2,000, from the British Council in Lisbon.

2004 Named researcher in the project for scientific infrastructure “CIMAR, Associated Laboratory: Equipment for renovation and strategic development”, 1,700,000 EUR from the Foundation for Science and Technology, Portugal.

2004 Named researcher in the project for scientific infrastructure “Laboratório de Materiais e Superfícies”, 500,000 EUR, from the Foundation for Science and Technology, Portugal.

2005-2008 PI for a task in the research project “Nonlinear waves in discrete, periodic and quasiperiodic systems”, ref. POCI/FIS/56237/2004, 70,000 EUR, from the Foundation for Science and Technology, Portugal. Coordinator: Vladimir Konotop.

2007-2008 PI in the project “Protein dynamics and quantum networks”, 10,000 hours (extended to 40,000 hours), in the second National Call of the Laboratory for Advanced Computing of the University of Coimbra.

2009-2010 PI in the project “Dynamical stability of the human prion”, 10,000 hours, in the third National Call of the Laboratory for Advanced Computing of the University of Coimbra.

2010-2012 Named researcher in the project “Transporte Mediado Por Solitones en Sistemas Anarmonicos Mono- Y Bi-dimensionales”, ref. FIS2009-06585-E/FIS, Modalida:EF- EXPLORA, 40,0000 euros, from Ministerio de Ciencia e Innovacion, Spain, coordinator: Manuel Garcia Velarde, Universidade Complutense de Madrid.

2010-2013 PI for a task in the research project “Intermediates states: At the crossroads of pathways to folding and pathways to disease”, ref. PTDC/SAU-GMG/098274/2008, 92.260,00 euros, from the Foundation for Science and Technology, Portugal. Coordinator: Patrícia Faísca.

2010-2011 PI in the project “A kinetic mechanism for protein folding”, 20,000 hours, in the fourth National Call of the Laboratory for Advanced Computing of the University of Coimbra.

2011-2013 Named researcher in the project “Transporte Mediado Por Solitones en Sistemas Anarmonicos Mono- Y Bi-dimensionales”, ref. FIS2009-06585-E/FIS, Modalida:EF- EXPLORA, 41.322 euros, from Ministerio de Ciencia e Innovacion, Spain, coordinator: Manuel Garcia Velarde, Universidade Complutense de Madrid.

2011-2012 PI in the project “A kinetic mechanism for protein folding” (extension), 20,000 hours, in the fifth National Call of the Laboratory for Advanced

Computing of the University of Coimbra.

2012-2013 PI in the project “Influência da temperatura na formação da estrutura das proteínas”, 20,000 hours, in the Sixth National Call of the Laboratory for Advanced Computing of the University of Coimbra.

2013 Participant, together with Professor J.C. Eilbeck, in the project “Determination of the Hamiltonian that best describes the amide I band of crystalline acetanilide”, for 1160, within the Numerical Algorithms and Intelligent Software (NAIS) Centre under Grant EP/G036136/1 supported by the UK Engineering and Physical Sciences Research Council.

2014 Participant, together with Professor J.C. Eilbeck, in the project “Finite temperature, mixed quantum/classical simulations of energy localisation in crystalline acetanilide”, for 1160, within the Numerical Algorithms and Intelligent Software (NAIS) Centre under Grant EP/G036136/1 supported by the UK Engineering and Physical Sciences Research Council.

MEETINGS ORGANIZED

Conformational Changes, Joint Research School Meeting at Birkbeck College, November 28, 1997 (main organiser).

Energy Transduction in Biological Systems, Summer school at ITQB, Oeiras, Portugal, June 15-27, 1998 (main organiser).

Physics in Medicine, 4th Southern European School of the European Physical Society at the University of Algarve, September 1-12, 2001 (local organizer).

Second European Workshop on Exo/Astrobiology, Graz, Austria, September 16-19, 2002 (member of the Scientific Committee).

Mini-workshop on “Computer Simulations in Nanobiological Systems”, anfiteatro C, CCMAR, Universidade do Algarve, May 27, 2010 (main organizer).

MEMBERSHIP OF PROFESSIONAL SCIENTIFIC SOCIETIES

American Association for the Advancement of Science

The European Physical Society (Individual Member)

The Portuguese Physical Society

British Biophysical Society

The Portuguese Biophysical Society

The Portuguese Biochemical Society

European Exo/Astrobiology Network Association

COMPUTING SKILLS

Experienced programmer in Fortran

Has written programs for molecular dynamics and Monte Carlo simulations of classical and quantum systems

Experienced user of the following operating systems: Linux and Unix, Windows and of the molecular dynamics package AMBER. Experience in the commercial packages QUANTA and SYBYL, and of the freeware software Visual Molecular Dynamics (VMD) for modeling and graphical display of molecules such as proteins and DNA.

LANGUAGE SKILLS

Portuguese (native language).

English (Very good oral, reading and writing skills).

French (Good oral and writing, and very good reading skills).

Italian and Spanish (fair reading and mediocre oral skills).

German (basic skills).

TEACHING EXPERIENCE

Birkbeck College

from October 1990 to October 1998, taught the module of Dynamical Processes and from October 1991 to October 1998 taught also the module of Molecular Interactions, both in the MSc on Molecular Modelling and Bioinformatics.

University of Algarve

since April, 2000 has taught undergraduate courses for the following degrees: Physics and Chemistry (PC), Physical Engineering (technological and medical physics branches) (PE), Biochemistry (BC), Marine Biology and Fishing (MB), Environmental Engineering (EE), Oceanography (O), Teaching of Biology and Geology (BG), Biotechnological Engineering (BT), Agronomic Engineering (AE) and for Health degrees such as Clinical Analysis and Public Health (CAPH), Radiology (R), Pharmacy (P) and Dietetics (D).

1999/2000

2nd semester: Thermodynamics (PC, PE)(4.5 h)

2000/2001

1st semester: Physics (MB) (5 h) + Mechanics/Electromagnetism (PC, PE)(3 h) + Modules in Master for the Teaching of Physics (0.5 h);

2nd semester: General Physics II (PC, PE) (4 h) + Physics II (EE, O)(2 h);

Management and other duties 2000/2001:

Secretary of the Scientific Committee of the departmental area of Physics (from 9th of October of 2000 to 25th of October 2001); Member of the Direction of the Physics and Chemistry degree.

2001/2002

1st semester: Physics (MB) (5 h) + Biophysics (PC, PE)(4.5 h);

2nd semester: General Physics II (2 h) + Physics II (5.5 h)

Management and other duties 2001/2002:

Member of the Committee for Scientific Internships, Curricular Projects and Seminars.

Member of Self-Assessment Nucleus, 2001/2002.

Elected representative of the Course Directors in the coordinating committee of Self-Assessment Nucleus, 2001-2003.

Member of the Direction of the Physics and Chemistry degree.

2002/2003

1st semester: Physics (MB) (5 h) + Physics I (3.5 h) + General Physics I (1.5 h);

2nd semester: Introduction to Quantum Mechanics and Relativity (3 h) + Thermodynamics (3 h)

Management and other duties 2002/2003:

Director of the Physics and Chemistry degree.

Member of the Direction of the Physics Engineering degree. Member of Self-Assessment Nucleus, 2001/2002.

Elected representative of the Course Directors in the coordinating committee of Self-Assessment Nucleus, 2001-2003.

Member of the Direction of the Physics and Chemistry degree.

Co-responsible for writing the report of self-assessment of the Physics and Chemistry degree during the academic year of 2001/2002.

Co-responsible for writing the report of self-assessment of the Physics Engineering degree during the academic year of 2001/2002.

Member of the Committee for Scientific Internships, Curricular Projects and Seminars.

2003/2004

1st semester: Physics (5 h) + Biophysics (4 h) + Statistical Physics (3.5 h);

2nd semester: Introduction to Quantum Mechanics and Relativity (1.5 h) + General Physics II (2 h) + Applied Physics (2 h)

Management and other duties 2003/2004:

Director of the Physics and Chemistry degree.

Member of the Direction of the Physics Engineering degree.

Elected member, for three years, of the Assembly of Representatives of the Faculty of Sciences and Technology.

2004/2005

1st semester: Physics (6.5 h) + Statistical Physics (3.5 h);

2nd semester: Introduction to Quantum Mechanics and Relativity (1.5 h) + General Physics II (3 h) + Applied Physics (2 h)

Management and other duties 2004/2005:

Member of the Direction of the Physics Engineering degree.

Member of the Assembly of Representatives of the Faculty of Sciences and Technology.

2005/2006

1st semester: Physics (6.5 h) + General Physics I (3h) + Statistical Physics (3.5 h);

2nd semester: General Physics II (4 h) + Applied Physics (2 h)

Management and other duties 2005/2006:

Member of the Direction of the Physics Engineering degree.

Member of the Assembly of Representatives of the Faculty of Sciences and Technology.

2006/2007

Sabbatical year

Management and other duties 2006/2007:

Participation in the creation of the Physics course (1st cycle), in partnership with the Faculty of Sciences of the University of Lisbon and with the University of Évora, and following the Bologna agreement.

2007/2008¹

1st semester: Biophysics (60 h)

2nd semester: Physics (55 h) + Applied Physics (67.5 h) + General Physics I (19.5 h)

Management and other duties 2007/2008:

Elected president of the Scientific Committee of the Physics department (60 h).

Member of the Coordinating Commission of the Scientific Council of the Faculty of Sciences and Technology.

2008/2009

1st semester: Analytical Mechanics (55 h)

2nd semester: Physics (55 h) + Physics for Natural Sciences (20 h) + General Physics II (40 h)

Management and other duties 2008/2009:

President of the Scientific Committee of the Physics department (60 h).

Member of the Coordinating Commission of the Scientific Council of the Faculty of Sciences and Technology.

2009/2010

1st semester: Physics (100 h)

¹From 2006 onwards the lecturing times are reported in total number of hours per each course, rather than hours per week.

2nd semester: Physics (65 h) + Physics for Natural Sciences (25 h) + Physics (20 h)

2010/2011

1st semester: Physics (Landscape Architecture) (22.6 h) + Physics (Biochemistry) (70 h) + Physics (Biomedical Sciences) (20 h)

2nd semester: Physics (Pharmaceutical Sciences + Biotechnology)(85 h) + Physics for Natural Sciences (Agronomy) (25 h) + Physics for Natural Sciences (Biology + Marine Biology) (15 h)

2011/2012

1st semester: Physics (Biochemistry) (70 h)

2nd semester: Physics (Pharmaceutical Sciences + Biotechnology)(85 h)

Management and other duties 2011/2012:

President of the Physics Department (60 h).

Member of the Scientific Council of the Faculty of Sciences and Technology.

2012/2013

1st semester: Physics II (Informatic Engineering + Electronic Engineering and Telecommunications) (67.5 h)

2nd semester: Physics (Pharmaceutical Sciences + Biotechnology + Biochemistry + Biomedical Sciences)(60 h)

Management and other duties 2011/2012:

President of the Physics Department (60 h).

Member of the Scientific Council of the Faculty of Sciences and Technology.

Jury duties 2012/2013:

Member of the Jury of the Master Thesis entitled “Modelling the eukaryotic cell cycle”, by Luís Carlos Gomes Pereira, for the Master in Biomedical Engineering of Instituto Superior Técnico, Lisbon, Portugal, November 15, 2012.

Main examiner of the Jury of the PhD Thesis entitled “Técnicas de Ressonância Nuclear em Materiais Magnéticos”, by José Fernando Morais Lopes Mariano, for the PhD in Physics of Instituto Superior Técnico, Lisbon, Portugal, December 13, 2012.

Member of Jury for the prize “Aluno de Excelência da FCT”.

2013/2014

Sabbatical year

2014/2015

1st semester: Physics II (Informatics Engineering + Electronic Engineering and Telecommunications + Marine Sciences) (30 h)

2nd semester: Physics (Biology + Marine Biology + Biotechnology + Biochemistry + Agronomy)(135 h)

2015/2016

1st semester: Physics II (Informatics Engineering + Electronic Engineering and Telecommunications + Marine Sciences + Biological Engineering) (30 h) + Contemporaneous Physics (Post-graduate course in Physics for Teachers) (24 h)

2nd semester: Physics (Agronomy + Biology + Biotechnology)(90 h)

Management and other duties 2015/2016:

President of the Physics Department (60 h).

Member of the Scientific Council of the Faculty of Sciences and Technology.

Member of Jury for the prize “Aluno de Excelência da FCT”.

2016/2017

1st semester: Physics II (Informatics Engineering + Electronic Engineering and Telecommunications + Marine Sciences) (30 h)

2nd semester: Physics (Agronomy + Biotechnology)(75 h)

Management and other duties 2016/2017:

President of the Physics Department (60 h).

Member of the Scientific Council of the Faculty of Sciences and Technology.

INVITED LECTURES

1. “Thermal stability of the Davydov soliton”, at the NATO ARW “Self-trapping of energy in Proteins”, Hanstholm, Denmark, July 30- August 5, 1989.
2. “On exact solutions of the Davydov model”, at the NATO ARW on “Coherent and Emergent Phenomena in Biomolecular Systems”, Arizona Health Science Center, The University of Arizona, Tucson, Arizona, January 15-19, 1991.
3. “Monte Carlo simulations of the Davydov Model”, at MIDIT, The Technical University of Denmark, Lyngby, Denmark, September 26, 1991.
4. “The Davydov soliton: a mechanism for energy transfer in proteins”, at the University of Westminster, London, February, 1, 1992.
5. “Molecular dynamics of chemically modified DNA”, Maths Dept., Univ. Surrey, Guildford, February 5, 1992.
6. “Energy Transfer in Proteins”, at the Department of Chemistry, University of York, York, UK, August 17, 1994.
7. ‘Mechanism for energy transfer in proteins’ at Instituto Gulbenkian de Ciência, Oeiras, Portugal, December 14, 1995.
8. ‘Finite temperature simulations of mixed quantum/classical systems’, at the physics department, University College, London, May 15, 1996.
9. ‘Solitons: do they have a function in Biology?’, at the Physics Department, University College London, 8 December 1997.
10. ‘Proteins are quantum mechanical machines’, Plenary lecture at the Acta Biophysica Romana ’98, University of Rome, La Sapienza, Rome, Italy, 18 March 1998.
11. ‘Proteins are not purely mechanical machines’, at the Department of Chemistry, University of York, York, UK, 26 May 1998.
12. ‘Post-Genomics Science: the role of Physics’, at the 14th UK-Japan High Technology Industry Forum, Plymouth, 14-15 July, 1999.
13. ‘Vibrational energy transfer as the first step in protein function’, at the MGMS York2000, University of York, York, 5-8 April, 2000.
14. ‘What Kind of Machines are Proteins?’, at the 12th National Conference in Physics (Física 2000), at Figueira da Foz, Portugal, 27-30 September, 2000.

15. ‘Como funcionam as proteínas ?’, at the Department of Physics of the University of Porto, Porto, Portugal, 9 February 2001.
16. ‘How do proteins work?’, at the First European Workshop on Exo/Astrobiology, at ESRIN, (ESA), Frascati, Italy, 21-23 May, 2001.
17. “Os Ingredientes da Vida”, no Centro de Ciência Viva, Faro, Portugal, 7 July, 2001.
18. “Vibrational excited states and Protein Folding and Function”, at the 4th Gulbenkian Autumn Meeting on Theoretical and Computational Biology, Gulbenkian Institute of Science, Oeiras, Portugal, 23-26 October, 2001.
19. “Os Ingredientes da Vida”, no Centro de Ciência Viva, Faro, Portugal, 24 de Novembro, 2001.
20. “Protein folding: funnels or multifunnels?”, at the department of mathematics, Heriot-Watt University, Edinburgh, Scotland, UK, 31 January, 2002.
21. “What drives protein folding and protein function?”, at the meeting on “Localization and Energy Transfer in Nonlinear Systems”, El Escorial, Madrid, Spain, 17-21 June, 2002.
22. “Vibrational Energy Transfer and protein conformational changes”, at the NATO ARW on “Nonlinear Waves: Classical and Quantum Aspects”, Estoril, Portugal, 13-17 July, 2003.
23. “Vibrational Energy Transfer and protein folding and function” at the NATO ARW on “Intrinsic Localized Modes and Discrete Breathers in Nonlinear Lattices”, Erice, Sicily, Italy, 21-27 July, 2003.
24. “A Formação da estrutura das proteínas e a sua função”, at IBMC, Porto, Portugal, 17th March, 2004.
25. “Estados vibracionais excitados e a Formação da Estrutura das Proteínas”, at CFTC of University of Lisbon, Portugal, 5th May 2004.
26. “The VES hypothesis and prion diseases” at the CECAM workshop on “Protein folding and misfolding: Bringing theory close to experiment and vice versa”, CECAM, Lyon, France, September 19-22, 2006.
27. “The VES hypothesis and protein folding and function” at the workshop on Protein Science, at the Centre for Theoretical and Computational Physics, University of Lisbon, Lisbon, Portugal, November, 8, 2006.

28. “Protein folding and Davydov/Scott model” (Plegamiento de Proteínas. El Modelo de Davydov/Scott), at the University of Seville, Seville, Spain, May 24, 2007.
29. “Protein folding in a multi-funnel energy landscape”, at Heriot-Watt University, Edinburgh, Scotland, U.K., June 20, 2007.
30. “Quantum Vibrational Excited States and Protein Function”, at SQIG/IT, IST, Technical University of Lisbon, Lisbon Portugal, September 25, 2009.
31. “The VES Hypothesis and Protein Function”, at the First Porto Meeting On Theory and Experiments in Nonlinear Physics, Porto, Portugal, July 7-9, 2010.
32. “A kinetic mechanism for protein folding in a multi-funnel free energy landscape”, at the IV Spanish-Portuguese Biophysical Congress 2010, Zaragoza, Spain, July 8-10, 2010.
33. “Nonlinear waves in biomolecules and HTSC”, at “Nonlinear waves and Solitons in Lattices: A meeting in honour of Chris Eilbeck on his retirement”, ICMS, Edinburgh, Scotland, UK, Apr 4-5, 2011.
34. “Nonlinear models for Protein Folding and Function”, at the Week of Science, Instituto Pluridisciplinar, Madrid, Spain, Sept 12-16, 2011.
35. “A Kinetic Mechanism for Protein Folding”, at Centro de Física Teórica e Computacional, Lisbon, Portugal, June 5th, 2012.
36. “Quantum vibrational excited states and protein function”, at Institute of Physics, University of Kassel, Oct 17, 2013.
37. “The Folding of a Small Protein”, plenary lecture at the International Conference on Nonlinear Mathematics and Physics (NOLINEAL 2016), Seville, Spain, June 7-10, 2016.

OTHER ORAL PRESENTATIONS AT SCIENTIFIC MEETINGS

1. **L. Cruzeiro** and K.M.C. Da Silva, “Present Models of the Sodium Pump: critical evaluation and suggestion of an alternative mechanism”, at the III Annual Meeting of the Portuguese Physiology Society, July 6, 1981.
2. **L. Cruzeiro**, P.L. Christiansen, J. Halding, O. Skovgaard and A.C. Scott, “Temperature stability of the Davydov soliton”, at the Physics in Biology, The Technical University of Denmark, Lyngby, Denmark, November 12-13, 1986.

3. **L. Cruzeiro**, P.L. Christiansen and O.G. Mouritsen, "Lipid Membrane Phase Transitions and Ion Permeability", at the Physics in Biology, The Technical University of Denmark, November 12-13, 1986.
4. **L. Cruzeiro**, "Thermal Effects on the Competition Between Coherent and Non-coherent Energy propagation in Biomolecules", Niels Bohr Institute, Copenhagen, Denmark, April 15, 1987.
5. **L. Cruzeiro-Hansson**, "Influence of the phase transition on the permeability properties of lipid bilayers", Midit Tea Talk no. 32, The Technical University of Denmark, Lyngby, Denmark, March 10, 1988.
6. **L. Cruzeiro-Hansson**, "The Quantum Discrete Self-Trapping Equation. II. Numerical", at the Topical Meeting on Complexity and Chaos, Midit, The Technical University of Denmark, August 15, 1988.
7. **L. Cruzeiro-Hansson**, "Computer simulations of energy transfer in proteins", at the Department of Crystallography, Birkbeck College, London, February 6, 1989.
8. **L. Cruzeiro-Hansson**, "Path Integral Monte Carlo Methods", at the London Atomistic Simulation Group, Department of Chemistry, Imperial College, London, September 24, 1990.
9. **L. Cruzeiro-Hansson** and J.M. Goodfellow, "Computer simulation of Alkylated DNA", at the London Atomistic simulation group, Department of Chemistry, University College, London, September 18, 1991.
10. **L. Cruzeiro-Hansson** and J.M. Goodfellow, "Molecular dynamics simulation of alkylated B-DNA", at the Fifth Nordic Symposium on Computer Simulations of Liquids and Solids, Örenäs Castle, Sweden, September 21-22, 1991.
11. **L. Cruzeiro-Hansson**, "Stacking interactions", in the Simulation Group Meeting on Stability of Macromolecular Structures, Crystallography Department, Birkbeck College, London, November 14, 1991.
12. **L. Cruzeiro-Hansson**, "Finite temperature simulations of the semiclassical Davydov Model", at the NATO-MIDIT Advanced Study Institute on Future Directions of Nonlinear Dynamics in Physical and Biological Systems, The Technical University of Denmark, Lyngby, Denmark, July 23 - August 1, 1992.
13. **L. Cruzeiro-Hansson**, "Molecular Dynamics simulation of DNA duplexes including methylated thymine bases", at the Dept. Matem. Appl. Estad. e Inv. Oper., Fac. Ciências, Univ. Pais Vasco, Bilbao, Spain, December, 3, 1992.

14. **L. Cruzeiro-Hansson**, “Molecular Dynamics and databases”, at the Protein and DNA Structural Databases, Institute of Cancer Research, Sutton, UK, August 13, 1993.
15. **L. Cruzeiro-Hansson**, “Exact two quanta states of the semiclassical Davydov model and their thermal stability” at ‘Nonlinear Excitations in Biomolecules’ workshop, Centre de Physique des Houches, France, May 30-June 4, 1994.
16. **L. Cruzeiro-Hansson** and V.M.Kenkre, “Comment on the phase problem in thermodynamic averages of semiclassical systems”, at the Third IMACS International Conference on Computational Physics, Lyngby, Denmark, August 1-4, 1994.
17. **L. Cruzeiro-Hansson**, “Molecular Dynamics studies of the effect of alkylation on DNA structure and dynamics”, at MIDIT, Bldg 306, The Technical University of Denmark, DK-2800 Lyngby, Denmark, November 25, 1994.
18. **L. Cruzeiro-Hansson**, “Thermal effects on localised solutions of the Fröhlich/-Holstein/Davydov Hamiltonian’ at the CCP1/CCP5 workshop on ‘Modelling of Localised States in Condensed Matter”, University of Keele, 14-16 June, 1995.
19. **L. Cruzeiro-Hansson**, “The Davydov model: lessons from dimers and N-mers’ at the conference on ‘Nonlinear Coherent Structures in Physics and Biology”, Heriot-Watt University, Edinburgh, Scotland, 10-14 July, 1995.
20. **L. Cruzeiro-Hansson**, “Computer simulations of energy transfer in macromolecules”, at the London Atomistic Modelling and Simulation Group Meeting, Birkbeck College, March 19, 1996.
21. **L. Cruzeiro-Hansson**, “A stochastic mechanism for energy transfer in proteins”, at the joint group meeting, Birkbeck College, London, November 28, 1996.
22. **L. Cruzeiro-Hansson**, “Short time energy transfer in proteins”, at the conference on ‘Solitons and Coherent structures in Physics and Biology’, Technical University of Denmark, Lyngby, Denmark, 29 May-3 June, 1997.
23. **L. Cruzeiro-Hansson**, “What Drives a Conformational Change ?”, at the Joint Research School meeting on ‘Conformational Changes’, Birkbeck College, London, 28 November 1997.
24. **L. Cruzeiro-Hansson**, “DNA bending by sequence induced torsional stress”, at the BBS meeting on ‘Structure Function and Dynamics of Nucleic Acids’, at the University of Surrey, Guildford, 12-13 January, 1998.

25. **L. Cruzeiro-Hansson**, “An alternative model for the FoF1 ATP synthase”, at the Summer School on ‘Energy Transduction in Biological Systems’, ITQB, Oeiras, Portugal, 15-27 June 1998.
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**PEER REVIEWED BOOK CHAPTERS
AND CONFERENCE PROCEEDINGS**

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