

CURRICULUM VITAE

RUI GOMES MENDONÇA NEVES, Ph.D

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1 Personal Data

Name: Rui Gomes Mendonça Neves

Date of birth: July 25, 1967

ID card number: 7773025

Place of birth: Nossa Senhora de Fátima - Lisboa, Portugal

Nationality: Portuguese

Family: Married, two sons, 19 and 13 years old

Work address:

Unidade de Investigação Educação e Desenvolvimento (UIED)
Departamento de Ciências Sociais Aplicadas (DCSA)
Faculdade de Ciências e Tecnologia (FCT)
Universidade Nova de Lisboa (UNL)
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2 Academic Degrees

PhD, Physics (High Energy Physics and Gravitation: Particle Theory), 1994-1997, Department of Mathematical Sciences, University of Durham, UK. Registered in *Universidade de Lisboa*, Portugal, with the number 9, 1998. Thesis title: *Conformal field theories on random surfaces and the non-critical string*. Final classification: A (High Standard).

MSc, Physics (High Energy Physics and Gravitation), 1993-1994, Department of Mathematical Sciences, University of Durham, UK. Final classification: A.

Mestrado, Physics (High Energy Physics and Gravitation: Particle Phenomenology), 1991-1994, *Departamento de Física* (DF), *Faculdade de Ciências, Universidade de Lisboa* (FCUL), Portugal. Thesis title: *W bosons, bound states and anomalous effects*. Final classification: Good.

Licenciatura, Physics, 1985-1991, DF, FCUL, Portugal. Final average classification (scale 0-20): 16.

Secondary Education, Area A: Health, Sciences and Technologies, 1982-1985, Secondary School João de Deus, Faro, Portugal. Final average classification (scale 0-20): 17.3.

3 Professional Profile

Assistant Investigator, 1/2008 - present, *Unidade de Investigação Educação e Desenvolvimento* (UIED) and *Departamento de Ciências Sociais Aplicadas* (DCSA), *Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa* (FCT/UNL) and *Fundação para a Ciência e a Tecnologia, Ministério da Educação, Ciência e Ensino Superior* (MCTES), 2008-2011, *Ministério da Educação e Ciência* (MEC), 2011-present, Portugal.

Postdoctoral Research Fellow, 2/2006 - 12/2007, *Centro de Electrónica, Optoelectrónica e Telecomunicações* (CEOT) and *Departamento de Física* (DF), *Faculdade de Ciências e Tecnologia, Universidade do Algarve* (FCT/UAlg), Portugal.

Postdoctoral Research Fellow, 9/2005 - 2/2006, FCT/MCTES, *Centro Multidisciplinar de Astrofísica, Instituto Superior Técnico* (CENTRA-IST) and DF, FCT/UAlg, Portugal.

Assistant Professor, 2/2004 - 9/2005, DF, FCT/UAlg, Portugal.

Postdoctoral Research Fellow, 9/2001 - 2/2004, FCT/MCTES, CENTRA-IST, DF, FCT/UAlg, Portugal.

Assistant Professor, 9/2000 - 9/2001, *Área de Engenharia* (AE), *Escola Superior de Tecnologia e Gestão* (ESTG), *Instituto Politécnico de Portalegre* (IPP), Portugal.

Postdoctoral Research Fellow, 9/1997 - 9/2000, FCT/MCTES, CENTRA-IST, DF, FCT/UAlg, Portugal.

PhD Research Fellow, 1/1994 - 9/1997, *Junta Nacional de Investigação Científica e Tecnológica* (JNICT)/MCTES, *Centre for Particle Theory* (CPT), *Department of Mathematical Sciences, University of Durham*, UK.

Mestrado Research Fellow, 10/1991 - 1/1994, JNICT/MCTES, DF, FCUL, Portugal.

4 Pedagogical and Administrative Activities

4.1 *Universidade Nova de Lisboa*

Monograph, 1st year, PhD Programme in Sciences of Education, FCT/UNL, *Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa* (FCSH/UNL) and *Instituto Superior de Psicologia Aplicada* (ISPA). Main themes: Preparation of the monograph, usually a PhD thesis project. Bibliography: Cohen, L., Manion, L., & Morrison, K. (2005). *Research methods in education*. Routledge-Falmer; Burke Johnson, R., & Christensen, L. (2007). *Educational research: Quantitative, qualitative and mixed approaches*. Sage Publications, Inc. Duties: Teaching theoretical classes, supervision of PhD thesis projects and presidency of assessment committees of final monograph seminar examinations. Academic years: 2008/2009 - 2011/2012.

Forum of Research Projects, 2nd and following years, PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL, ISPA. Theme: Monitoring and assessment of the

evolution of the PhD projects already approved in the Monograph. Duties: Coordinating Chair of PhD candidates oral presentation sessions. Academic years: 2010/2011 and 2011/2012.

Biophysics, 1st year, Integrated Master Degree in Biomedical Engineering, DF, FCT/-UNL. Main themes: Classical mechanics, thermodynamics and kinetic theory, fluid dynamics, electricity and magnetism, optics. Bibliography: Davidovits, P. (2001). *Physics in biology and medicine*. Harcourt/Academic Press; Herman, I. (2007). *Physics of the human body*. Springer-Verlag; P. Tipler, P. (1991). *Physics for Scientists and Engineers*. Worth Publishers. Duties: Teaching computational practical-theoretical classes. Academic years: 2009/2010, 2011/2012 and 2012/2013.

Physics, 2nd year, *Licenciatura* in Informatics Engineering, *Departamento de Informática* (DI) and DF, FCT/UNL. Main themes: Classical mechanics. Bibliography: Young, H., & Freedman, R. (2004). *University physics*. Addison-Wesley; Tipler, P. (1991). *Physics for scientists and engineers*. Worth Publishers; Halliday, D., Resnick, R., & Walker, J. (1997). *Fundamentals of physics*. Wiley. Duties: Teaching computational practical-theoretical classes. Academic years: 2010/2011 to 2012/2013.

Thematic Seminar I, 1st year, PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL, ISPA. Main themes: Research seminars by J. Schwartz, *A Melange of modelling issues*, & J. Thormann, *Teaching and learning online: Building learning communities*. Duties: Regency and teaching of theoretical classes. Academic year: 2009/2010.

Applied Research Seminar IV, 3rd year, PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL, ISPA. Main themes: Monitoring and assessment of the evolution of PhD projects. Duties: Regency. Academic year: 2009/2010.

Applied Research Seminar III, 3rd year, PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL, ISPA. Main themes: Monitoring and assessment of the evolution of the PhD projects. Duties: Regency. Academic year: 2009/2010.

Physics IB, 1st year, Integrated Master Degree in Biomedical Engineering, DF, FCT/-UNL. Main themes: Classical mechanics. Bibliography: Young, H., & Freedman, R. (2004). *University physics*. Addison-Wesley; Tipler, P. (1991). *Physics for scientists and engineers*. Worth Publishers; Halliday, D., Resnick, R., & Walker, J. (1997). *Fundamentals of physics*. Wiley. Duties: Teaching computational practical-theoretical classes. Academic years: 2007/2008 and 2008/2009.

Thematic Seminar II, 1st year, PhD Programme in Sciences of Education, FCT/UNL. Main themes: Teaching and learning in science, technology and mathematics. Bibliography: Reif, F. (2008). *Applying cognitive science to education: Thinking and learning in scientific and other complex domains*. MIT Press; Slooten, O., van den Berg, E., & Ellermeijer, T. (Eds.) (2006). *Proceedings of the International Group on Research on Physics Education (GIREP) 2006 Conference: Modelling in physics and physics education*. GIREP, European Physical Society; Blum, W., Galbraith, P., Henn, H.-W., & Niss, M. (Eds.) (2007). *Modelling and applications in mathematics education*. Springer; Neves, R., Silva, J., & Teodoro, V. (2009). *Computational modelling with Modellus: An enhancement vector for the general university physics course*. In A. Bilsel & M. Garip (Eds.), *Frontiers in Science Education Research* (pp. 461-470). Famagusta, Cyprus: Eastern Mediterranean University Press. Duties: Coordination, regency and teaching of all theoretical classes. Academic year: 2008/2009.

Physics I, 1st year, *Licenciaturas* and Integrated Master Degrees of several Engineering courses, FCT/UNL. Main themes: Classical mechanics. Bibliography: Tipler, P. (1991). *Physics for scientists and engineers*. Worth Publishers; Halliday, D., Resnick, R., & Walker, J. (1997). *Fundamentals of physics*. Wiley. Duties: Teaching computational practical-theoretical classes. Academic year: 2008/2009.

Advisor of PhD theses:

PhD thesis titles: *3D Visualisation in Chemistry Education: A study with interactive documents*; *Scientific literacy and writing in Basic Education*. PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL and ISPA.

Participation in Academic Assessment Committees:

President of the Monograph Assessment Committees of PhD student thesis projects: Isabel Caetano (*Visualização 3D no ensino da química: um estudo com documentos interativos*), Lígia Rêgo (*A importância dos instrumentos (online) no processo de ensino-aprendizagem de PLN*), Paula Campos (*Entre Éris e Thémis: A liderança escolar e o papel das emoções nas interações e na formação de percepções sobre o líder*), Inácia Capucho (*Do básico para o secundário: relação dos resultados escolares com a motivação, a percepção do clima de sala de aula e o autoconceito académico*), Sandra Martins (*A avaliação de desempenho contribui para a melhoria das práticas pedagógicas docentes?*), Lino Oliveira (*Formação e supervisão de professores - como promover o sucesso de alunos com NEE?*), 11/2012; Teresa Rodrigues (*Sobre o ensino da teoria da relatividade restrita*), Celina Arroz (*Auto-disciplina na sala de aula: alunos mais envolvidos na aprendizagem e professores mais confiantes?*), Fernanda Torre (*Hábitos da mente e sucesso escolar: Desenvolvimento de um programa*), 3/2012; Helena Freitas (*O optimismo académico em contexto de estágio*), 2/2012; João Rodrigues (*A estruturação do tempo escolar: As lógicas da mudança e a optimização do uso do tempo em contexto de escola básica*), 1/2012; Ana André (*A auto-regulação na aprendizagem de crianças do 1^o ciclo*), Henriqueta Silva (*Atitudes dos professores do Ensino Básico Integrado da ilha de São Vicente, Cabo Verde, face à inclusão de crianças com necessidades educativas especiais nas classes regulares*), Ana Bigio (*Utilização das imagens (estáticas/animadas) no ensino das ciências naturais*), 11/2011; Sónia Pacheco (*A Textualidade e as TIC no ensino pré-escolar: A interpretação de texto e as narrativas digitais*), 3/2011. PhD Programme in Sciences of Education, FCT/UNL, FCSH/UNL and ISPA.

Principal Evaluator of the MSc Thesis Assessment Committee of João Carlos Camoéz (*Relatório de estágio*), MSc Programme in Sciences of Education, Physics-Chemistry Education, FCT/UNL, 1/2013.

Administration:

Member of the Coordination Committee of the PhD Programme in Sciences of Education, FCT/UNL. Academic year: 2008/2009.

Member of the Reviewers Committee for EAPRIL 2010 - International Conference of the European Association for Practitioner Research on Improving Learning in education and professional practice: Challenges in professional learning across the disciplines, Lisbon, Portugal. Date: 2010.

4.2 *Universidade do Algarve*

Astronomy and Astrophysics, 4th year, *Licenciatura* in Physics-Chemistry, DF, FCT/UAlg. Main themes: The solar system, stars, galaxies and the expanding universe. Bibliography: Zeilik, M., & Gregory, S. (1998). *Introductory astronomy and astrophysics*. Harcourt Brace College Publishers; Carroll, B., & Ostlie, D. (2003). *An introduction to modern astrophysics*. Addison-Wesley. Duties: Coordination, regency and teaching of all theoretical classes. Academic years: 2003/2004 and 2004/2005.

Electrodynamics, 3rd year, *Licenciaturas* in Technological Physics Engineering and Physics Engineering (Technological Physics and Medical Physics), DF, FCT/UAlg. Main themes: Classical electromagnetic waves, electromagnetic radiation emission, electrodynamics and Einstein's special relativity. Bibliography: Reitz, J., Milford, F., & Christy, R. (1993). *Foundations of electromagnetic theory*. Addison-Wesley Publishing Company; Wangsness, R. (1986). *Electromagnetic fields*. John Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2004/2005.

Mathematical Techniques of Physics, 2nd year, *Licenciaturas* in Technological Physics Engineering and Physics Engineering (Technological Physics and Medical Physics) and Physics-Chemistry, DF, FCT/UAlg. Main themes: Infinite series, complex analysis, differential equations, Fourier series, Sturm-Liouville theory, integral transforms and variational calculus. Bibliography: Arfken, G. (1985). *Mathematical methods for physicists*. Academic Press. Duties: Teaching of all practical-theoretical classes. Academic year: 2004/2005.

Mechanics, 2nd year, *Licenciaturas* in Technological Physics Engineering and Physics Engineering (Technological Physics and Medical Physics) and Physics-Chemistry, DF, FCT/UAlg. Main themes: Classical mechanics. Bibliography: Marion, J., & Thornton, S. (1995). *Classical dynamics of particles and systems*. Harcourt Brace College Publishers; Symon, K. (1971). *Mechanics*. Addison-Wesley Publishing Company. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2004/2005.

General Physics I, 1st year, *Licenciatura* in Systems and Informatics Engineering, Biochemistry, Chemistry, Technological Physics Engineering and Physics Engineering (Technological Physics and Medical Physics) and Physics-Chemistry, FCT/UAlg. Main themes: Classical mechanics. Bibliography: Serway, R. (1996). *Physics for scientists and engineers*. Saunders College Publishers; Marion, J., & Hornyak, W. (1985). *General physics with bioscience essays*. John Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2004/2005.

Physics, 2nd year, *Licenciatura* in Mathematics, *Departamento de Matemática* (DM), FCT/UAlg. Main themes: Classical mechanics. Bibliography: Serway, R. (1996). *Physics for scientists and engineers*. Saunders College Publishers; Marion, J., & Hornyak, W. (1985). *General physics with bioscience essays*. John Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2004/2005.

General Physics II, 1st year, *Licenciatura* in Biochemistry, *Departamento de Química e Bioquímica* (DQB), FCT/UAlg. Main themes: Oscillations, thermodynamics, elec-

tricity and magnetism. Bibliography: Serway, R. (1996). *Physics for scientists and engineers*. Saunders College Publishers; Marion, J., & Hornyak, W. (1985). *General physics with bioscience essays*. John Wiley and Sons. Duties: Teaching of practical-theoretical classes. Academic year: 2003/2004.

Administration:

Member of the Scientific Council of the FCT/UAlg and of the Scientific Committee of the DF, FCT/UAlg. Academic year: 2004/2005.

Member of the Organizing Committee of the International Conference *Workshop on the Exact Renormalization Group*, DF, FCT/UAlg. Date: 1998.

4.3 *Instituto Politécnico de Portalegre*

Mathematical Analysis IV, 4th year, *Licenciatura* in Electromechanical Engineering and Industrial Quality Engineering, AE, ESTG. Main themes: Complements of ordinary differential equations, Fourier analysis and partial differential equations. Bibliography: Neves, R.(2001). *Sebenta de análise matemática IV*; Apostol, T. (1975). *Calculus*, vols. 1 & 2. John Wiley and Sons; Kreyszig, E. (2000). *Advanced engineering mathematics*. John Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2000/2001.

Mathematical Analysis III, 4th year, *Licenciatura* in Electromechanical Engineering and Industrial Quality Engineering, AE, ESTG. Main themes: Differential and integral calculus in \mathcal{R}^N . Bibliography: Neves, R.(2001). *Sebenta de análise matemática III*; Apostol, T. (1975). *Calculus*, vols. 1 & 2. John Wiley and Sons; Kreyszig, E. (2000). *Advanced engineering mathematics*. John Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2000/2001.

Mathematical Analysis II, 1st year, *Licenciatura* in Industrial Quality Engineering, AE, ESTG. Main themes: Ordinary differential equations, Laplace transforms, sums and series, multiple integrals. Bibliography: Apostol, T. (1975). *Calculus*, vols. 1 & 2. John Wiley and Sons. Duties: Teaching of practical-theoretical classes. Academic year: 2000/2001.

Mathematical Analysis I, 1st year, *Licenciatura* in Civil Engineering, Electromechanical Engineering and Industrial Quality Engineering, AE, ESTG. Main themes: Differential and integral calculus in \mathcal{R} . Bibliography: Apostol, T. (1975). *Calculus*, vols. 1 & 2. John Wiley and Sons. Duties: Teaching of practical-theoretical classes. Academic year: 2000/2001.

Administration: Member of the Scientific Committee of AE, ESTG. Academic year: 2000/2001.

4.4 Other Pedagogical Activities and Qualifications

Secondary education teacher training course. Title: *Oscillations and waves: Experiments and modelling*. Física 2010, 17th National Physics Conference (CNF) and 20th

Iberian Meeting on Physics Education, *Universidade de Trás-os-Montes e Alto Douro* (UTAD) and *Sociedade Portuguesa de Física* (SPF), Vila Real, Portugal. Main themes: Computational modelling of oscillatory and wave phenomena. Bibliography: Reif, F. (2008). *Applying cognitive science to education: Thinking and learning in scientific and other complex domains*. MIT Press; Serway, R., & Jewett, J. (2009). *Physics for scientists and engineers with modern physics*. Cengage Learning Brooks/Cole; Neves, R., Silva, J., & Teodoro, V. (2009). *Computational modelling with Modellus: An enhancement vector for the general university physics course*. In A. Bilsel & M. Garip (Eds.), *Frontiers in science education research* (pp. 461-470). Famagusta, Cyprus: Eastern Mediterranean University Press; Caldeira, H., Bello, A., & Marques de Almeida, M. J. (2009). *Física e química A: Física 11^o ano*. Porto Editora. Duties: Coordination of the course and teaching of all classes. Date: 9/2010.

Public proofs for Coordinating Professor. Title: *The expanding universe*. Scientific area: Natural and Exact Sciences. Curricular Group: Physics and Chemistry. *Escola Superior de Educação* (ESE), UAlg, Faro, Portugal. Final classification: Unanimous approval with absolute merit. Date: 1/2010.

Secondary education teacher training course. Title: *Laboratory physics 10th grade*. DF and DCSA, FCT/UNL. Main themes: Computational modelling activities for mechanics and thermodynamics. Bibliography: Tipler, P. (1991). *Physics for scientists and engineers*. Worth Publishers; Halliday, D., Resnick, R., & Walker, J. (1997). *Fundamentals of physics*. Wiley; Neves, R., Silva, J., & Teodoro, V. (2009). *Computational modelling with Modellus: An enhancement vector for the general university physics course*. In A. Bilsel & M. Garip (Eds.), *Frontiers in science education research* (pp. 461-470). Famagusta, Cyprus: Eastern Mediterranean University Press. Duties: Teaching computational practical-theoretical classes. Date: 8/2009.

Theoretical Lecture on computational modelling in science education, given to the students of Technologies Applied to the Teaching of Sciences II, *Mestrado* in Didactics and Innovation in Science Teaching, FCT/UAlg. Bibliography: Reif, F. (2008). *Applying cognitive science to education: Thinking and learning in scientific and other complex domains*. MIT Press; Neves, R., Silva, J., & Teodoro, V. (2009). *Computational modelling with Modellus: An enhancement vector for the general university physics course*. In A. Bilsel & M. Garip (Eds.), *Frontiers in science education research* (pp. 461-470). Famagusta, Cyprus: Eastern Mediterranean University Press. Date: 6/2009.

Seminar given to secondary education teachers in the Physics Olympiads 2009, FCT/UNL. Title: *Computational modelling and Modellus in physics education*. Date: 5/2009.

Interactive seminar given to 1st cycle basic education students. Title: *Learning mathematics with Modellus*. Centro de Exposições de Odivelas, Odivelas, Portugal. Date: 5/2009.

Public proofs for Coordinating Professor. Title: *Maxwell equations*. Scientific area: Physics. *Instituto Superior de Engenharia de Lisboa* (ISEL), Lisboa, Portugal. Final classification: Unanimous approval with absolute merit. Date: 7/2006.

Biophysics, 2nd year, *Licenciatura* in Pathological, Cytological and Thanatological Anatomy, *Escola Superior de Saúde de Silves* (ESSS), *Instituto Superior Jean Piaget*, Portugal. Main themes: Fluid dynamics, thermodynamics and kinetic theory. Bibliography: Marion, J., & Hornyak, W. (1985). *General physics with bioscience essays*. John

Wiley and Sons. Duties: Coordination, regency and teaching of all theoretical classes and practical-theoretical classes. Academic year: 2003/2004.

5 Scientific Research Activities

5.1 Areas of Activity and Interest

Sciences of Education: Theory and Curricular Development, Technologies and Multimedia, Teacher Training - Science, Technology, Engineering and Mathematics Education (cognition, scientific and mathematical knowledge, learning and teaching environments; development and integration of curricular activities with computational modelling; implementation of interactive engagement learning and teaching environments; applications to the learning and teaching processes in university level education (physics, geosciences, biomedicine and mathematics) and in secondary education (physics, chemistry, geology, biology and mathematics)).

High Energy Physics and Gravitation: Higher dimensional field theories with membranes - Superstring theory (non-critical strings and dual membranes, conformal field theories (CFT), ADS/CFT correspondence, non-perturbative methods, renormalization group, supersymmetry, implications for cosmology, particle phenomenology, astrophysics and condensed matter physics); Randall-Sundrum Universes (exact solutions of Einstein equations, stars and black holes, dark matter and dark energy, inflationary cosmology, perturbations and stability, gravitational waves, supersymmetry, experimental tests); Mathematical and computational aspects (functional integrals, differential equations, operators, algebra, groups and symmetries, differential geometry and Riemann geometry, real and complex analysis, statistics and probabilities, numerical analysis, programming in Mathematica, Matlab, C, Java, Python, Fortran).

Biomedical Physics: Spectroscopy and electromagnetic imaging - Optical tomography (theory of photon propagation in turbid and biological media, path integrals, Boltzmann equation and Green's function methods in radiative transport theory, analytic and numerical imaging methods).

Technological Physics: Applications of classical and quantum field theories with boundaries, the exact renormalization group and superstring theory to condensed matter systems relevant for the development of technological devices, e.g., biosensors, solar cells, phototherapy devices, superconductors and quantum computers.

Geophysics: Computational modelling in seismology, geodynamics and plate tectonics.

5.2 Publications

For the articles published in the area of High Energy Physics and Gravitation from 1996 to 2007 the following convention, common at the time, is used: in an article with several authors, the authors are ordered alphabetically by their surnames. In this convention the principal author may not be the first author in the author list. In these cases, the name of the principal author is underlined. In the other articles, the principal author

is the first author of the list. For more informations related to the articles see also the Web of knowledge, ResearcherID (see ResearcherID URL A-3789-2012) and arXiv.org (see paper preprints at hep-th, hep-ph and physics).

5.2.1 Articles in International Peer-Reviewed Scientific Journals

Neves, R., Neves, M. C., & Teodoro, V. (2012). Modellus: Interactive computational modelling to improve teaching of physics in the geosciences. *Computers and Geosciences*, accepted in 12/2012.

Teodoro, V., & Neves, R. (2011). Mathematical modelling in science and mathematics education. *Computer Physics Communications* 182 (1), 8-10.
DOI: 10.1016/j.cpc.2010.05.021.

Neves, R., & Teodoro, V. (2010). Enhancing science and mathematics education with computational modelling. *Journal of Mathematical Modelling and Application* 1 (2), 2-15. See: <http://proxy.furb.br/ojs/index.php/modelling/issue/view/179>.

Neves, M. C., & Neves, R. (2009). Flexure and seismicity across the ocean-continent transition in the Gulf of Cadiz. *Journal of Geodynamics* 47 (2,3), 119-129.
DOI: 10.1016/j.jog.2008.07.002.

Neves, R., & Guerra, R. (2008). A new path integral approximation to photon propagation in turbid media. *Waves in Random and Complex Media* 18 (4), 669-692.
DOI: 10.1080/17455030802315102.

Neves, R. (2007). Braneworlds, conformal fields and the gravitons. *Journal of Physics A: Mathematical and Theoretical* 40 (25), 6991-6997. DOI: 10.1088/1751-8113/40/25/S51

Elizalde, E., & Neves, R. (2006). Modified gravity on the brane and dark energy. *General Relativity and Gravitation* 38 (9), 1367-1377. DOI: 10.1007/s10714-006-0316-z.

Neves, R., & Vaz, C. (2006). Braneworlds and dark energy. *Journal of Physics A: Mathematical and General* 39 (21), 6617-6626. DOI: 10.1088/0305-4470/39/21/S61.

Neves, R. (2004). On the stability of Randall-Sundrum braneworlds with conformal bulk fields. *Vestnik of the Tomsk State Pedagogical University* Volume: Natural and Exact Sciences 7 (44), 94-98. See: arXiv:hep-th/0409051

Neves, R., & Vaz, C. (2003). Brane dynamics, the polytropic gas and conformal bulk fields. *Physics Letters B* 568 (1,2), 153-159. DOI: 10.1016/j.physletb.2003.06.003.

Neves, R., & Vaz, C. (2003). Brane world dynamics and conformal bulk fields. *Physical Review D* 68 (2), 024007-024019. DOI: 10.1103/PhysRevD.68.024007.

Neves, R., & Vaz, C. (2003). Inhomogeneous dark radiation dynamics on a de Sitter brane. *Astrophysics and Space Science* 283 (4), 537-542.
DOI: 10.1023/A:1022533524191.

Neves, R., & Vaz, C. (2002). Dark radiation dynamics on the brane. *Physical Review D* 66 (12), 124002-124014. DOI: 10.1103/PhysRevD.66.124002.

Kubyshin, Y., Neves, R., & Potting, R. (2002). Solutions of the Polchinski ERG equation in the $O(N)$ scalar model. *International Journal of Modern Physics A* 17 (32), 4871-4902. DOI: 10.1142/S0217751X02011400.

Kubyshin, Y., Neves, R., & Potting, R. (2001). Polchinski ERG equation in $O(N)$ scalar field theory. *International Journal of Modern Physics A* 16 (11), 2065-2070. DOI: 10.1142/S0217751X01004712.

Neves, R. (1997). D-instantons in non-critical open string theory. *Physics Letters B* 411 (1,2), 73-78. DOI: 10.1016/S0370-2693(97)01006-X.

Bento, L., & Neves, R. (1997). Implications of anomalous gauge boson interactions to the fermion electromagnetic moments. *Modern Physics Letters A* 12 (10), 673-683. DOI: 10.1142/S0217732397000704.

Mansfield, P., & Neves, R. (1996). Boundary conformal field theories on random surfaces and the non-critical open string. *Nuclear Physics B* 479 (1,2), 82-112. DOI: 10.1016/0550-3213(96)00446-4.

5.2.2 Articles in International Conference Proceedings Books with Peer Reviewing

Neves, R., Neves, M. C., & Teodoro, V. (2012). Teaching physics and mathematics for earth sciences with computational modelling. In Taşar, M. F. (Ed.), *WCPE - World Conference on Physics Education 2012: Proceedings*. Istanbul, Turkey: Bahçeşehir University, GIREP, EPS. Submitted, 11/2012.

Neves, R., & Teodoro, V. (2012). Improving science and mathematics education with computational modelling in interactive engagement environments. In T. Simos, G. Psihoyios, C. Tsitouras and Z. Anastassi (Eds.), *Numerical Analysis and Applied Mathematics 2012*, AIP Conference Proceedings 1479, 1806-1809. ISBN: 978-0-7354-1091-6. DVD ISBN: 978-0-7354-1089-3. DOI: 10.1063/1.4756529.

Neves, R., & Teodoro, V. (2012). Preface of the Symposium on Modelling, Computers and Interactive Environments in Science and Mathematics Education. In T. Simos, G. Psihoyios, C. Tsitouras and Z. Anastassi (Eds.), *Numerical Analysis and Applied Mathematics 2012*, AIP Conference Proceedings 1479, 1804-1805. ISBN: 978-0-7354-1091-6. DVD ISBN: 978-0-7354-1089-3. DOI: 10.1063/1.4756528.

Neves, R., Schwartz, J., Silva, J., Teodoro, V., & Vieira, P. (2012). Learning introductory physics with computational modelling and interactive environments. In A. Lindell, A.-L. Kähkönen & J. Viiri (Eds.), *Proceedings of the GIREP-EPEC 2011 Conference - Physics Alive* (pp. 208-213). Jyväskylä: University of Jyväskylä, GIREP, European Physics Society (EPS). ISBN: 978-951-39-4801-6.

See: [Electronic-proceedings-of-the-girep-epec-2011-conference](#).

Neves, R., & Teodoro, V. (2010). Computers, modelling and meaningful learning in science and mathematics. In F. Albuquerque Costa, E. Cruz & J. Viana (Eds.), *1^o Encontro Internacional TIC e Educação - Inovação Curricular com TIC: CD da Conferência* (pp. 569-574). Lisboa: Instituto de Educação, Universidade de Lisboa. ISBN: 978-989-96999-1-5.

Neves, R., Silva, J., & Teodoro, V. (2010). Computational modelling in science, technology, engineering and mathematics education. In A. Araújo, A. Fernandes, A. Azevedo & J. F. Rodrigues (Eds.), *Proceedings of the EIMI 2010 Conference: Educational interfaces between mathematics and industry* (pp. 387-397). Bedford, MA: Centro Internacional de Matemática e Comap Inc. ISBN: 978-1-933223-64-2.

See: http://www.cim.pt/files/proceedings_eimi_2010.pdf.

Neves, R., Silva, J., & Teodoro, V. (2009). Computacional modelling with Modellus: An enhancement vector for the general university physics course. In A. Bilsel & M. Garip (Eds.), *Proceedings of FISER09: Frontiers in science education research* (pp. 461-470). Famagusta: Eastern Mediterranean University Press. ISBN: 978-975-8401-67-3.

See: [arXiv:1006.4662](https://arxiv.org/abs/1006.4662)[physics.ed-ph].

Neves, R. (2006). Braneworlds, conformal fields and dark energy. In A. Mourão, M. Pimenta, R. Potting & P. Sá (Eds.), *New worlds in astroparticle physics: Proceedings of the fifth international workshop* (pp. 305-311). Singapore: World Scientific. ISBN: 981-256-625-2. DOI: 10.1142/9789812774439_0034.

Neves, R., & Vaz, C. (2004). Conformal bulk fields, dark energy and brane dynamics. In H. V. Klapdor-Kleingrothaus (Ed.), *Proceedings of the fourth Tegernsee international conference on particle physics beyond the Standard Model, Beyond 2003* (pp. 671-681). Heidelberg: Springer. ISBN: 3-540-21843-2. See: [arXiv:hep-th/0309115](https://arxiv.org/abs/hep-th/0309115).

Neves, R., & Vaz, C. (2003). Dark radiation and localization of gravity on brane. In A. Krasnitz, A. Mourão, M. Pimenta & R. Potting (Eds.), *New worlds in astroparticle physics: Proceedings of the fourth international workshop* (pp. 82-88). Singapore: World Scientific. ISBN: 981-238-584-3. DOI: 10.1142/9789812791160_0006.

Kubyshin, Y., Neves, R., & Potting, R. (1999). Polchinski ERG equation and 2D scalar field theory. In A. Krasnitz, Y. Kubyshin, R. Potting & P. Sá (Eds.), *The Exact Renormalization Group: Proceedings of the workshop* (pp. 159-167). Singapore: World Scientific. ISBN: 981-02-3939-4. See: [arXiv:hep-th/9811151](https://arxiv.org/abs/hep-th/9811151).

5.2.3 Articles or Chapters in Books

Neves, R., Silva, J., Teodoro, V., & Vieira, P. (2012). Integrating computational modelling in science, technology, engineering and mathematics education. In A. Damlamian, R. Straesser, F. Santosa, H. Aslaksen (Eds.), *New ICMI Study Series, vol. 16, The 20th ICMI Study: Educational interfaces between mathematics and industry*, accepted for publication. Springer.

Teodoro, V., Schwartz, J., & Neves, R. (2012). Cognitive artifacts, technology and physics learning. In N. M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 572-576). Dordrecht: Springer. ISBN: 978-1-4419-1427-9. DOI: 10.1007/978-1-4419-1428-6_940.

Neves, R., Silva, J., & Teodoro, V. (2011). Improving learning in science and mathematics with exploratory and interactive computational modelling. In G. Kaiser, W. Blum, R. Borromeo-Ferri & G. Stillman (Eds.), *International perspectives on the teaching and*

learning of mathematical modelling, vol. 1, ICTMA14: Trends in teaching and learning of mathematical modelling (chapter 33, pp. 331-341). Dordrecht: Springer. ISBN: 978-94-007-0909-6. DOI: 10.1007/978-94-007-0910-2.

Neves, R., Silva, J., & Teodoro, V. (2010). Modelação computacional: Um vector de aperfeiçoamento do ensino universitário da física geral. In J. Matos (Ed.), *Anais Educação e Desenvolvimento 2009* (pp. 1-12). Lisboa: UIED, FCT/UNL. ISSN: 1645/1775.

Neves, R., Silva, J., & Teodoro, V. (2010). Improving the general physics university course with computational modelling. In J. Matos (Ed.), *Anais Educação e Desenvolvimento 2009* (pp. 13-24). Lisboa: UIED, FCT/UNL. ISSN: 1645/1775.

5.2.4 Edited Books or Journal Special Issues

Neves, R., Teodoro, V., & Fernandes, J. (Editors) (2012). Perspectives and challenges for science, technology, engineering and mathematics education. *Revista Lusófona de Educação*. Accepted for edition, in preparation.

5.2.5 Theses

Neves, R. (1997). *Conformal field theories on random surfaces and the non-critical string*. PhD thesis in Physics. Department of Mathematical Sciences, University of Durham, UK; British Library, UK; University of Durham Library, UK; University of Lisbon Library, Portugal.

Neves, R. (1999). *Bosões W , estados ligados e efeitos anómalos*. Mestrado thesis in Physics. DF, Faculty of Sciences, University of Lisbon (FCUL); University of Lisbon Library, Portugal.

5.3 Communications and Abstracts

In oral or poster communications the principal author is the presenting author and may not be the first in the author list. In these cases, the name of the principal author is underlined. In the other cases, the principal author is the first author of the list. In workshop communications all authors are presenting authors. In these cases the name of the principal author is also underlined when it is not the first in the author list.

5.3.1 Seminars or Talks in International Conferences

Neves, R., Neves, M. C., & Teodoro, V. (2012). A Modelação computacional e o ensino das geociências. In *Proceedings of the 46^o Congresso Brasileiro de Geologia e 1^o Congresso de Geologia dos Pases de Língua Portuguesa: DVD de resumos*. Santos: SBG e SPG. Month: October.

Neves, R., Neves, M. C., & Teodoro, V. (2012). Teaching physics and mathematics for earth sciences with computational modelling. In Taşar, M. F. (Ed.), *WCPE - World*

Conference on Physics Education 2012: Book of abstracts (p. 155). Istanbul, Turkey: Bahçeşehir University, GIREP, EPS. Month: July. See: <http://www.wcpe2012.org/>.

Neves, R., Schwartz, J., Silva, J., Teodoro, V., & Vieira, P. (2011). Learning introductory physics with computational modelling and interactive environments. In A.-L. Latvala, M. Leino, A. Lindell, J. Maalampi, J. Merikoski & J. Viiri (Eds.), *GIREP-EPEC 2011 - Physics Alive: Book of abstracts* (p. 52). Jyväskylä, Finland: University of Jyväskylä, GIREP, EPS. ISBN: 978-951-39-4375-2. Month: December. See: <https://congress.cc.jyu.fi/girep2011/schedule/proceedings/author/authorG.html>.

Teodoro, V., & Neves, R. (2011). Learning advanced mathematical physics knowledge and reasoning with computational modelling. In *ICTMA15-15th International Conference on the Teaching of Mathematical Modelling and Applications*. Melbourne, Australia: Australian Catholic University. Month: July. See: <http://www.ictma15.edu.au/abstracts.html>.

Neves, R., & Teodoro, V. (2010). Computers, modelling and meaningful learning in science and mathematics. In F. Albuquerque Costa, E. Cruz & J. Viana (Eds.), *1^o Encontro Internacional TIC e Educação - Inovação Curricular com TIC: Livro de resumos* (p. 53). Lisboa, Portugal: Instituto de Educação, Universidade de Lisboa. ISBN: 978-989-96999-0-8. Month: November.

Neves, R., Silva, J., & Teodoro, V. (2010). Computational modelling in science, technology, engineering and mathematics education. In *EIMI 2010 Conference: Educational interfaces between mathematics and industry*. Lisbon, Portugal: University of Lisbon. Month: October. See: <http://eimi.glocos.org/>.

Neves, R., Teodoro, V., & Vieira, P. (2010). Modelling and computational modelling in introductory biophysics. In J.-S. Antoniow, V. Barbin, J.-L. Bodnar, M. Dauchez, W. Kaminsky & G. Mary (Eds.), *GIREP-ICPE-MPTL 2010 - Teaching and learning physics today - challenges? benefits?: Book of abstracts* (pp. 172-173). Reims, France: University of Reims Champagne-Ardenne, GIREP, ICPE, MPTL. Month: August. See: http://www.univ-reims.fr/site/evenement/girep-icpe-mptl-2010-reims-international-conference/gallery_files/site/1/90/4401/22908/23075.pdf.

Neves, R., Silva, J., & Teodoro, V. (2009). Computational modelling and learning in science and mathematics. In *GIREP-EPEC-PHEC 2009 - Physics community and cooperation: Book of abstracts* (p. 90). Leicester, UK: University of Leicester, Institute of Physics (IOP), EPS. Month: August.

Neves, R., Silva, J., & Teodoro, V. (2009). Improving learning in science and mathematics with exploratory and interactive computational modelling. In G. Kaiser, W. Blum, R. Borromeo-Ferri & G. Stillman (Eds.), *ICTMA14-14th International Conference on the Teaching of Mathematical Modelling and Applications: Book of abstracts* (p. 70). Hamburg, Germany: University of Hamburg. Month: July. See: http://www.ictma14.de/media/files/ICTMA14_Abstracts_FINAL.pdf.

Teodoro, V., & Neves, R. (2009). Introducing scientific computation from high school to college: The case of Modelling. *Bulletin of the American Physical Society: 2009 APS March Meeting* 54 (1), L29.00004. Pittsburgh, USA: APS. Month: March. Ver: <http://meetings.aps.org/link/BAPS.2009.MAR.L29.4>.

Neves, R., Silva, J., & Teodoro, V. (2009). Computacional modelling with Modellus: An enhancement vector for the general university physics course. In *FISER09 - Frontiers in Science Education Research 2009 Conference*. Famagusta, Cyprus: Eastern Mediterranean University. Month: March.

Neves, R. (2006). Braneworlds, conformal fields and the gravitons. In *Second International Conference on Quantum Theories and Renormalization Group in Gravity and Cosmology*. Barcelona, Spain: Month: July. See: <http://www.ecm.ub.es/IRGAC2006/>.

Neves, R., & Vaz, C. (2005). Braneworlds and dark energy. In *Seventh Workshop on Quantum Field Theory under the Influence of External Conditions*. Barcelona, Spain: Month: September.

Neves, R. (2005). Braneworlds, conformal fields and dark energy. In *5th International Workshop on New Worlds in Astroparticle Physics*. Faro, Portugal: UAlg. Month: January.

Neves, R. (2003). Conformal bulk matter and brane dynamics. In *International Workshop on Particle Physics and the Early Universe: COSMO03*. Ambleside, UK: Month: September. See: <http://www.ippp.dur.ac.uk/old/cosmo03/EU.html>.

Neves, R., & Vaz, C. (2003). Conformal bulk fields, dark energy and brane dynamics. In *Fourth International Conference on Physics Beyond the Standard Model, Beyond the Desert 2003*. Tegernsee, Germany: Max Planck Institute. Month: June.

Neves, R., & Vaz, C. (2002). Dark radiation and localization of gravity on the brane. In *Fourth International Workshop on New Worlds in Astroparticle Physics*. Faro, Portugal: UAlg. Month: September.

Neves, R., & Vaz, C. (2002). Inhomogeneous dark radiation dynamics on a de Sitter brane. In *Workshop on Varying Fundamental Constants, JENAM 2002, The Unsolved Universe: Challenges for the Future*. Porto, Portugal: University of Porto. Month: September.

Kubyshin, Y., Neves, R., & Potting, R. (2000). Polchinski ERG equation in $O(N)$ scalar field theory. In *Second Conference on the Exact Renormalization Group*. Rome, Italy: University of Rome. Month: September.

Kubyshin, Y., Neves, R., & Potting, R. (1998). Polchinski ERG equation and 2D scalar field theory. In *Workshop on the Exact Renormalization Group*. Faro, Portugal: UAlg. Month: September.

5.3.2 Workshops in International Conferences

Neves, R., & Teodoro, V. (2012). Modelling, Computers and Interactive Environments in Science and Mathematics Education. ICNAAM 2012 - International Conference of Numerical Analysis and Applied Mathematics 2012. Symposia, 150. Kos, Greece. Month: September. See <http://2012.icnaam.org/>.

Neves, R., & Teodoro, V. (2012). Modellus: A tool for interactive mathematical modelling. In Taşar, M. F. (Ed.), *WCPE - World Conference on Physics Education 2012*:

Book of abstracts (p. 332). Istanbul, Turkey: Bahçeşehir University, GIREP, EPS. Month: July. See: <http://www.wcpe2012.org/>.

Teodoro, V., Neves, R., Esquembre, F., Christian, W., & Hwang, F.-K. (2010). Physics curricula: how to embed computer modelling activities?. In J.-S. Antoniow, V. Barbin, J.-L. Bodnar, M. Dauchez, W. Kaminsky & G. Mary (Eds.), *GIREP-ICPE-MPTL 2010 - Teaching and learning physics today - challenges? benefits?: Book of abstracts* (p. 39). Reims, France: University of Reims Champagne-Ardenne, GIREP, ICPE, MPTL. Month: Agosto. See: http://www.univ-reims.fr/site/evenement/girep-icpe-mptl-2010-reims-international-conference/gallery_files/site/1/90/4401/22908/23003.pdf.

Teodoro, V., & Neves, R. (2009). Using computational modelling and Modellus in science and mathematics education. In *GIREP-EPEC-PHEC 2009 - Physics community and cooperation: Book of abstracts* (p. 75). Leicester, UK: University of Leicester, IOP, EPS. Month: August.

5.3.3 Posters in International Conferences

Neves, R., Neves, M. C., & Teodoro, V. (2011). Introducing seismic tomography with computational modeling. In *2011 AGU Fall Meeting*. San Francisco, USA: AGU. Month: December. See: <http://www.agu.org/meetings/fm11/waisfm11.html>.

Neves, R., Neves, M. C., & Teodoro, V. (2011). Improving learning processes in meteorology with computational modelling. *Geophysical Research Abstracts* Vol. 13, EGU2011-6122. Month: April. See http://meetingorganizer.copernicus.org/EGU2011/poster_programme/7791.

Neves, R., & Teodoro, V. (2010). Computers, modelling and Modellus in physics education. In M. Naia, A. Fortuna, J. Silva, J. Almeida & M. Pereira (Eds.), *Física 2010 - 17ª Conferência Nacional de Física e 20º Encontro Ibérico para o Ensino da Física: Livro de resumos* (pp. 363-364). Vila Real, Portugal: UTAD and SPF. Month: September.

Neves, M. C., Neves, R., & Teodoro, V. (2009). Learning meteorology with computational modelling based on Modellus. In *GIREP-EPEC-PHEC 2009 - Physics community and cooperation: Book of abstracts* (p. 105). Leicester: University of Leicester, IOP, EPS. Month: August.

Neves, R., & Teodoro, V. (2008). Science education and computational modelling. In *Workshop Ciência 2007: Book of abstracts* (p. 35). Lisboa, Portugal: UNL. Month: October.

Neves, R., Silva, J., & Teodoro, V. (2008). Modelação computacional: Um vector de aperfeiçoamento do ensino universitário da física geral. In *Física 2008 - 16ª Conferência Nacional de Física e 17º Encontro Ibérico para o Ensino da Física: Livro de resumos* (p. 84). Caparica, Portugal: FCT/UNL, SPF. Month: September.

Neves, R., Silva, J., & Teodoro, V. (2008). Improving the general physics university course with computational modelling. In *2008 Gordon Research Conference - Physics research and education: Computation and computer-based instruction*. Bryant, RI, USA: Bryant University. Month: June.

Neves, R., Pinto, P., & Guerra, R. (2007). Near-infrared laser tomography and path integrals: Improving the diffusion approximation. In *II jornadas ibéricas de fotoquímica: Livro de resumos* (p. 76). Faro, Portugal: UAlg. ISBN: 978-972-9341-63-2. Month: July.

Ventura, P., Pinto, P., Neves, R., & Guerra, R. (2007). Characterization of an instrument to measure diffuse photon density waves in turbid media. In *II jornadas ibéricas de fotoquímica: Livro de resumos* (p.96). Faro: UAlg. ISBN: 978-972-9341-63-2. Month: July.

Mansfield, P., & Neves, R. (1997). D-instantons in non-critical open string theory. In *Strings 97 International Conference*. Amsterdam, Holland: University of Amsterdam. Month: June.

Mansfield, P., & Neves, R. (1997). Boundary conformal field theories on random surfaces and the non-critical open string. In *Strings 97 International Conference*. Amsterdam, Holland: University of Amsterdam. Month: June.

5.3.4 Other Talks or Seminars

Neves, R. (2013). *Using computational modeling in introductory physics education*. Department of Mathematics, Physics and Computer Sciences, Blue Ash College, University of Cincinnati, Cincinnati, USA. Month: January.

Neves, R., & Teodoro, V. (2012). A modelação computacional e o ensino da física e da matemática. In *7^o Encontro Aprendizagem em Ambiente Formal e Informal: Recursos Educativos Digitais no Desenvolvimento das Aprendizagens: Livro de resumos*. Month: May.

Neves, R. (2000). *Renormalization group flows in the open string sigma model*. DF, Universidade da Beira Interior (UBI), Covilhã, Portugal. Month: February.

Neves, R. (1999). *String effective actions and the renormalization group*. Department of Mathematical Sciences, University of Durham, UK. Month: December. See: Neves, R. (2000). *Renormalization group flow in BRST invariant open string σ -model*. In arXiv:hep-th/0008026.

Neves, R. (1998). *Strings and dual membranes*. Unidade de Ciências Exactas e Humanas (UCEH), UAlg, Faro, Portugal. Month: April.

Neves, R. (1997). *Conformal field theories on random surfaces and the non-critical string*. UCEH/UAlg, Faro, Portugal. Month: April.

5.3.5 Participation in other Conferences, Meetings or Exhibitions

2009 Annual Conference of the Association for Science Education, University of Reading, Reading, UK. Date: 1/2009.

Science, Education, Multimedia and Technology Exhibition, BETT 2009, London, UK. Date: 1/2009.

Feira de Tecnologia, Educação e Ciência, Portugal Tecnológico, FIL, Lisbon, Portugal. Date: 11/2008.

Meeting Physics in the Pyrennees: Strings, Branes and Fields, Benasque Science Centre, Benasque, Spain. Date: 9/2001.

Lisbon School on Superstrings, Instituto Superior Técnico, University of Lisbon, Lisbon, Portugal. Date: 12/1998.

Workshop on CPT and Lorentz Symmetry, Department of Physics, Indiana University, Bloomington, USA. Date: 11/1998.

Spring School and Workshop on String Theory and Quantum Gravity, International Centre for Theoretical Physics (ICTP), Trieste, Italy. Date: 6/1996.

5.4 Scientific Research Projects

5.4.1 Coordination of Projects

Portuguese-Spanish Integrated Action E-126-04, *Conselho de Reitores das Universidades Portuguesas* (CRUP), 2004-2006. Scientific area: Physics - High Energy Physics and Gravitation. Title: *Gravitational collapse, holography and AdS/CFT duality in Randall-Sundrum universes*.

5.4.2 Participation in Projects

Project PTDC/MHC-CED/5116/2012 (AEPLEES - *Attitudes, expectations and practices in the portuguese secondary schools' science laboratories*), UIED/FFCT/FCT/-UNL, Parque Escolar, FCT/MEC. Scientific area: Sciences of Education. Starts in 2013.

Project PTDC/BBB-BMD/0611/2012 (FLIT - *A novel approach for tumoral targeted phototherapy: focusing light through scattering*). FFC/FC/UL, FFCT/FCT/UNL, INL, COFAC, FCT/MEC. Scientific area: Physics - Biomedical Physics. Starts in 2013.

Project Modellus, Ministério da Educação (ME) and Direcção Geral de Inovação e Desenvolvimento Curricular (DGIDC), 2007-2009. Scientific area: Sciences of Education.

Project POCTI/FAT/42850/2001 (*Spectroscopy and imagiology of biological tissues with laser light*) and **Project POCTI/FAT/45690/2002** (*Light scattering in biological and turbid media: A fractal approach*), FCT/MCTES, 2001-2006. Scientific area: Physics - Biomedical Physics.

Project POCTI/32694/FIS/2000: *Gravitational Collapse*, FCT/MCTES, 2002-2005. Scientific area: Physics - High Energy Physics and Gravitation.

Project CERN/P/FIS/1203/98 (*Non-perturbative methods in field theory*), FCT/MCTES/CERN, 1998-2001. Scientific area: Physics - High Energy Physics and Gravitation.

5.5 Awarded Fellowships and other Distinctions

Public proofs for Coordinating Professor. Title: *The expanding universe*. Scientific area: Natural and Exact Sciences. Curricular Group: Physics and Chemistry. Escola Superior de Educação (ESE), UAlg, Faro, Portugal. Nature of the distinction: Unanimous approval with absolute merit, 1/2010.

Public proofs for Coordinating Professor. Title: *Maxwell equations*. Scientific area: Physics. Instituto Superior de Engenharia de Lisboa (ISEL), Lisboa, Portugal. Nature of the distinction: Unanimous approval with absolute merit, 7/2006.

Postdoctoral Fellowship, CEOT-UAlg, FCT/UAlg, 2/2006-12/2007. Scientific area: Physics - Biomedical Physics. Title: *Demonstration of a prototype for optical tomography*.

Postdoctoral Fellowship, FCT/MCTES, SFRH/BPD/7182/2001, 2/2002 - 9/2004 and 11/2005 - 2/2006. Scientific area: Physics - High Energy Physics and Gravitation. Title: *Gravitational collapse and string theory*.

Postdoctoral Fellowship, FCT/MCTES, PRAXIS XXI/BPD/14137/97, 9/1997-9/-2000. Scientific area: Physics - High Energy Physics and Gravitation. Title: *Fundamental aspects of field theory*.

Quayle bursury, Department of Mathematical Sciences, University of Durham, UK, 7/1996.

PhD Fellowship, JNICT/MCTES, PRAXIS XXI/BD/2828/93, 1/1994-9/1997. Scientific area: Physics - High Energy Physics and Gravitation. Title: *Conformal field theories on random surfaces and the non-critical string*.

Mestrado Fellowship, JNICT/MCTES, CIÊNCIA/BM/2190/91, 10/1991-10/1993. Scientific area: Physics - High Energy Physics and Gravitation. Title: *Bosões W , estados ligados e efeitos anómalos*.

Tomás Cabreira Prize for the best Mathematics student (grade 20 in the scale 0-20) at the end of the Secondary Education course in Secondary School João de Deus, Faro, Portugal, 7/1984.

5.6 Participation in Scientific Centres, Societies or Groups

Member of UIED, FCT/UNL, Portugal, 2008-present.

Member of *Sociedade Portuguesa de Física* (SPF), Portugal, and of the European Physical Society (EPS), 1988-present.

Member of the *Sociedade Geológica de Portugal* (SGP), 2012-present.

Member of the International Group of Research in Physics Education (GIREP), 2010-2012.

Member of the American Physics Society (APS) and of the American Association of Physics Teachers (AAPT), 2009-2012.

Member of the European Geosciences Union (EGU), 2011-2012.

Member of the Association of Science Education (ASE), UK, 2009-2010.

Member of CEOT, FCT/UAlg, Portugal, 2003-2007.

Member of CENTRA-IST, Portugal, 1997-2007.

Member of the Centre for Particle Theory (CPT), Department of Mathematical Sciences, University of Durham, UK, 1994-1997.