

# Reactors and Nuclear Safety Unit

## Operation and Exploitation of the Reactor, Dosimetry (RPI) and Reactor Calculations

### Books

Data analysis software for ion beam analysis; N.P. Barradas and E. Rauhala, in Handbook of Modern Ion Beam Analysis, 2nd Edition, eds. Yongqiang Wang and Michael Nastasi, Materials Research Society, Warrendale 2010, pp 305-345.

Pitfalls in ion beam analysis; C. Jeynes and N.P. Barradas, in Handbook of Modern Ion Beam Analysis, 2nd Edition, eds. Yongqiang Wang and Michael Nastasi, Materials Research Society, Warrendale 2010, pp 347-383.

### International Journals

J.G. Marques, Evolution of Nuclear Fission Reactors: Third Generation and Beyond, *Energy Conversion and Management* 51 (2010) 1774-1780.

A.C. Fernandes, J.P. Santos, J.G. Marques, A. Kling, A. Ramos Wahl. N.P. Barradas, Validation of the Monte Carlo model supporting core conversion of the Portuguese Research Reactor (RPI) for neutron fluence rate determinations, *Ann. Nucl. Energy* 37 (2010) 1139-1145.

M. Felizardo, T. Morlat, A.C. Fernandes, TA Girard, J.G. Marques, A.R. Ramos, M. Auguste, D. Boyer, A. Cavaillou, C. Sudre, J. Poupeney, R.F. Payne, H.S. Miley, and J. Puibasset, First Results of the Phase II SIMPLE Dark Matter Search, *Phys. Rev. Lett.* 105 (2010) 211301.

A.C. Fernandes, M. Felizardo, A. Kling, T. Morlat, A.R. Ramos, J.G. Marques, Studies on the Efficiency of the Neutron Shielding for the SIMPLE Dark Matter Search, *Nucl. Instr. Meth. A* 623 (2010) 960-967.

M. Felizardo, T. Morlat, T.A. Girard, R.C. Martins, A.R. Ramos, J.G. Marques, Superheated Droplet Detector Response to Fabrication Variations, *Nucl. Instr. Meth. A* 614 (2010) 278-286.

M. Felizardo, R.C. Martins, T.A. Girard, Three Dimensional Passive Acoustic Spatial Identification of Nucleations in Superheated Droplet Detector, *Computer Standards & Interfaces* 32 (2010) 96-100.

H.M. Dung, M.C. Freitas, J.P. Santos and J.G. Marques, Re-characterization of Irradiation Facilities for k0-NAA at RPI after Conversion to LEU Fuel and Re-arrangement of Core Configuration, *Nucl. Instr. Meth. A* 622 (2010) 438-442.

### Communications

#### Oral

Characterization of the Fast Neutron Irradiation Facility of the Portuguese Research Reactor after Core Conversion, J.G. Marques, 6th Workshop on

*European Collaboration for Higher Education and Research in Nuclear Engineering and Radiological Protection*, Coimbra, June 2010.

Conversion of the Portuguese Research Reactor from HEU to LEU fuel, J.G. Marques, *Technical Meeting on Safety Aspects of Research Reactor Core Management and Conversion from HEU to LEU*, IAEA, Vienna, September 2010.

Portuguese Research Reactor: Activities and Perspectives for Collaborations, J.G. Marques, *Technical Meeting on Safety Aspects of Research Reactor Core Management and Conversion from HEU to LEU*, IAEA, Vienna, September 2010.

Progress and Status of European Research Reactor Conversions, J.G. Marques, *32nd International Meeting on Reduced Enrichment for Research and Test Reactors*, Lisbon, October 2010 (invited).

Utilização do Reactor Português de Investigação (RPI/ITN) em Tomografia com neutrões, M. A. Stanojev Pereira, CFNUL, 2010.

Reactores nucleares de cisão: presente e futuro, N. P. Barradas, *Colóquios do Centro de Física da Universidade do Minho*, March 2010, Braga (invited).

Data analysis software for ion beam analysis, *CAARI 2010 - 21st International Conference on the Application of Accelerators in Research and Industry*, August 2010, Fort Worth, USA (invited).

Integration of SIMS into a general purpose IBA data analysis code, *CAARI 2010 - 21st International Conference on the Application of Accelerators in Research and Industry*, August 2010, Fort Worth, USA (invited).

#### Poster

Utilização da técnica da radiografia com neutrões no estudo de objectos antigos, M.A. Stanojev Pereira, J.G. Marques, Reynaldo Pugliesi, *8º Encontro de Arqueologia do Algarve – A Arqueologia e as outras Ciências*. Silves, Portugal, 21-23 Outubro 2010.

### Internal Reports

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## Applied Dynamics

### Journals

X. Delaune, J. Antunes, V. Debut, P. Piteau, L. Borsoi, "Modal techniques for remote identification of non-linear reactions at gap-supported tubes under turbulent excitation", *ASME Journal of Pressure Vessel Technology*, Vol. 132, Paper 031801.

V. Debut, X. Delaune, J. Antunes, "Identification of nonlinear interaction forces acting on continuous systems using remote measurements of the vibratory responses", *International Journal of Mechanical Science*, Vol. 52, pp. 1419-1436 (2010).

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F. Axisa, "Flow conditions at the inlet of aspirating pipes: Part 1 – Theory". Paper FEDSM-ICNMM2010-

30074, *Proceedings of the 7th International Symposium on Fluid-Structure Interaction, Flow-Sound Interaction, Flow-Induced Vibration and Noise*, 1-5 August 2010, Montreal, Canada.

V. Debut, J. Antunes, F. Axisa, "Flow conditions at the inlet of aspirating pipes: Part 2 – Experiments". Paper FEDSM-ICNMM2010-30075, *Proceedings of the 7th International Symposium on Fluid-Structure Interaction, Flow-Sound Interaction, Flow-Induced Vibration and Noise*, 1-5 August 2010, Montreal, Canada.

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V. Debut, O. Inácio, T. Dumas, J. Antunes, "Modelling and experiments on string/body coupling and the effectiveness of a cello wolf-killing device", *Proceedings of the International Symposium on Musical Acoustics* (ISMA2010), 26-31 August 2010, Sydney and Katoomba, Australia.

### Communications

O. Inácio, V. Debut, L. Henrique, "Music acoustics as a support for instrument building", *IV Encontro Nacional de Luthiers*, 27 November 2010, Paços Brandão, Portugal.

V. Debut, "An introduction to the working principles of wind instruments", *Celebration the 30th anniversary of the Portuguese Society of Acoustics*, 17 December 2010, Porto, Portugal.

### Internal Reports

J. Antunes, VITAMINE 3.1 : Calcul vibratoire des éléments combustibles sous écoulements, *Report ITN/ADL-Set10-01*.

### Seminars

V. Debut, "Identification à distance de la force non-linéaire d'excitation pour une corde frottée", *Institut de Recherche de Mathématiques de Rennes (IRMAR, UMR 6625, UFR Math – Rennes)*, 27 January 2010, Rennes, France.

V. Debut, "La physique des instruments de musique et sa modélisation", *Seminar for students of the Master in Mechanics and Modelling, Université de Rennes*, 29 January 2010, Rennes, France.

J. Antunes, "Carillon bells and their tuning", *Palácio Nacional de Mafra*, 19 April 2010, Mafra, Portugal.

# Neutron Activation in Environment, Nutrition and Epidemiology

## Books

T.G. Verburg, S.M. Sarmento, H.T. Wolterbeek (2010): Statistical Approaches in Environmental Epidemiology. In: Advanced Trace Analysis (S. Lahiri, Ed.; Narosa Publishing House, New Delhi, India.

A.O.M. Carvalho, M.C. Freitas (2010): Poluentes e Nutrientes: Generalidades e Factos Relevantes, Euedito, Ed., Portugal.

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H.M. Dung, M.C. Freitas, M. Blaauw, S.M. Almeida, I. Dionisio, N.H. Canha, Quality control and performance evaluation of  $k_0$ -based neutron activation analysis and the Portuguese research reactor. *Nuclear Instruments and Methods in Physics Research A* 622 (2010) 392-398.

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N. Canha, M. Ribeiro, M.C. Freitas, M. Almeida Silva, S.M. Almeida, S. Cabo Verde, H.Th. Wolterbeek, Fungi, bacteria and pollens seasonally quantified at 3 basic schools in Lisbon, *ASHRAE IAQ 2010 Conference: Airborn Infection Control - Ventilation, IAQ & Energy*, Kuala Lumpur, Malaysia, 10-12 November, CDROM.

H.M. Anawar, M.C. Freitas, N. Canha, Contamination and phytoremediation of arsenic and other heavy metals and evaluation of different drying process to determine metals in plant species grown in a mining impacted area. In: *Ż. Bargańska, A. Beyer, K. Klimaszewska, J. Namieśnik, M. Tobiszewski, I. Rutkiewicz (Eds.) ISBN: 978-83-928986-5-8, Proceedings of 15th International Conference on Heavy Metals in the Environment (ICHMET)*, Gdańsk, Poland, 19-23 September, pp. 483-485.

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## Communications

### Oral

S.M. Almeida, N. Canha, M.C. Freitas, A. Silva, P. Pegas, C. Alves, M. Evtyugina, C.A. Pio, Children Exposure to Air Particulate Matter in the Indoor of Lisbon Primary Schools. *2010 AAAR Air Pollution and Health*, San Diego, USA, 22-26 March.

M. C. Freitas, I. Dionísio, A. Pacheco, C. Repolho, S. M. Almeida Silva, Ho Dung, Ana Cruz, Casimiro A. Pio, An Exhaustive Study of Atmospheric Parameters to Understand the Asthma and Rhinitis Cases among Children in Lisbon. Portugal. *2010 AAAR Air Pollution and Health*, San Diego, USA, 22-26 March.

S.M. Almeida, Indoor Air Quality in the Heating, Ventilation and Air Conditioning Project. HVAC Project, ISQ, Lisbon, Portugal, 20-24 November.

S.M. Almeida, Qualidade do Ar Interior em Escolas, Custos e Oportunidades, *Gestão de Edifícios Escolares, Consumo Energético, Qualidade do Ar Interior. Custos e Oportunidades*. Ordem dos Engenheiros, 30 November.

S.M. Almeida, Qualidade do Ar Interior em Escolas, Custos e Oportunidades, *Gestão de Edifícios, Consumo Energético, Qualidade do Ar Interior. Custos e Oportunidades*. Ordem dos Engenheiros, 16 December.

C. Galinha, M.C. Freitas, A.M.G. Pacheco, J. Kamenik, J. Kučera, H.M. Anawar, J. Coutinho, B. Maçãs, A.S. Almeida. Selenium in Cereal Plants and Cultivation Soils by Radiochemical Neutron Activation Analysis. *4th International Symposium on Nuclear Analytical Chemistry (NAC-IV)*, Bhaba Atomic Research Centre, Trombay, Mumbai, India, 15-19 November.

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M.C. Freitas, Different methodologies in NAA to assess pollutants at a Lisbon traffic tunnel. *4th International Symposium on Nuclear Analytical Chemistry (NAC-IV)*. Bhaba Atomic Research Centre, Trombay, Mumbai, India, 15-19 November.

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Nuno Canha, M. C. Freitas, Casimiro A. Pio, I. Dionísio, Ho Dung, Air pollution at an urban tunnel built for Western commuter entrance in Lisbon, Portugal: a Need for ventilation improvement. *Seminar of Activation Analysis and Gamma Spectroscopy (SAAGAS)*, Dresden-Rossendorf, Germany, 6-8 September.

Nuno Canha, Ho Manh Dung, Maria do Carmo Freitas, Susana Marta Almeida, Lea Canella, Stefan Sollradl, Petra Kudejová, Zsolt Révay, The New PGAA Facility Implementation Process at ITN, Portugal: environmental applications. *3rd User Meeting at FRM II*, Garching, Alemania, 15 October.

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M.C. Freitas, Paulo Fialho, Adriano Pacheco, Casimiro Pio and Gurdal Tuncel, Lower free troposphere aerosol elemental composition at Central North Atlantic Region. *Symposium on Atmospheric Chemistry and Physics at Mountain Sites*, Interlaken, Switzerland, 8-10 June.

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C. Galinha, M. C. Freitas, A.M.G. Pacheco. Transfer Coefficients and Enrichment Factors from Soil to Rye Plants by INAA, *16<sup>th</sup> Radiochemical Conference 2010 (RadChem2010)*, Marianske Lazne, Czech Republic, 18-23 April.

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