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Profile

Physicist with experience in Aerospace Ground Segment Systems and Computational Physics. Since January 2012 residing in Switzerland, in the Zürich area, and working as an independent professional consulting in the area of Aerospace Engineering. In December 2014 he founded the company Research and Development in Aerospace GmbH.

At DEIMOS Engenharia between May 2004 and December 2011, in the Ground Segment Systems Division. While he was Head of the Data Processing Division at DEIMOS, he also lead the project management team and the commercial activities of the Division for two years.

Between 1998 and 2002, designed and implemented the simulation and reconstruction code for the High Momentum Particle Identification Detector of the ALICE experiment as a CERN Doctoral Student.

Teaching experience, at university level, on the subjects of Introductory Physics, Electromagnetism and Circuit Theory.

Professional experience in Telecommunications, having implemented on-chip control software for Siemens HiX 5300 equipment (xDSL access concentrator).

Education

PhD in Physics, CERN/Instituto Superior Técnico – Technical University of Lisbon

2004

Thesis title is *“Design and implementation of the offline software for a RICH detector in Heavy Ion Physics”*.

Physics degree, Instituto Superior Técnico – UTL

1998

Specialized in Particle Physics and Computational Physics. Final grade of 16/20.

Experience

Managing Director of Research and Development in Aerospace GmbH

2015-present

As External Consultant for DEIMOS Engenharia

Project Manager of SMOS L1 Processor and SMOS Near Real Time Processor Support continuation contracts.

Project Manager of SS-E2ES (Space Science End-to-End Simulators Reference Architecture) contract.



Independent Professional in Aerospace Engineering Consultancy

2012-2014

Main contract as External Consultant for DEIMOS Engenharia

Project Manager of SMOS L1 Processor and SMOS Near Real Time Processor Support contracts. Member of SMOS Calibration Team at ESAC (European Space Astronomy Centre) and member of the SMOS Quality Working Group, as responsible for the L1 Expert Support Laboratories.

Project Manager of SAIRPS (Synthetic Aperture Interferometric Radiometers Performance Simulator) contract, having produced a full software suite to evaluate competing designs for the latest generation of these instruments. Contract extended in 2013 to include a full Radiative Transfer Model for input data generation.

Project Manager of SS-E2ES (Space Science End-to-End Simulators Reference Architecture) contract, which aims at producing a generic Reference Architecture applicable to all future Space Science Mission Simulators. The contract includes the definition of all the main Building Blocks necessary for a complete Simulator for the most common types of Missions, Instruments and Geometries.

Head of Data Processing Division at DEIMOS Engenharia, Ground Segment Systems Business Unit **2009 - 2011**

Coordination of GMES (Global Monitoring for Environment and Security) projects at Deimos, namely for the Sentinel 1 Commissioning Phase Calibration & Performance Analysis Facility (CPAF) and Sentinel 3 Optical and Topographic missions' System Performance Simulators (O-SPS and T-SPS).

Coordination of projects at Deimos for EMSA, namely the Satellite Automatic Identification System Phase B1 (definition and preliminary design) and for new missions' feasibility studies such as PARIS (a passive GNSS interferometer currently in Phase A).

Project Manager of Phases 5 & 6 of ESA's SMOS mission (Soil Moisture and Ocean Salinity) L1 Processor Prototype and SMOS Near Real Time Processor Support contracts. Member of SMOS Commissioning Core Team at ESAC (European Space Astronomy Centre) and member of the SMOS Quality Working Group, as responsible for the L1 Expert Support Laboratories (coordinating contributions from groups in Universitat Politecnica de Catalunya, Observatoire des Midi-Pyrenees/CNES and Danish Technical University).

Project Manager of SAIRPS (Synthetic Aperture Interferometric Radiometers Performance Simulator) contract, aimed at building a full software suite to evaluate competing designs for the latest generation of these instruments.

Group Manager at DEIMOS Engenharia, Ground Segment Division, Data Processing Group

2008 - 2009

Coordination of GMES Sentinel 3 Optical and Topographic missions' System Performance Simulators (O-SPS and T-SPS) - remote sensing instruments are a Sea and Land Surface Temperature Radiometer, an Ocean and Land Color Imager, a Synthetic Aperture Radar Altimeter and a Microwave Radiometer (Sentinel 3).



Project Manager of Phase 4 of SMOS L1 Processor Prototype and SMOS NRT contracts, responsible for the upgrade of calibration algorithms, support to L1 Operational Processor team, instrument sensitivity studies and software scientific validation.

Project Manager at DEIMOS Engenharia, Ground Segment Division.

2006-2008

Project Manager of Phase 3 of SMOS L1 Processor Prototype contract, responsible for the upgrade of calibration algorithms, support to L1 Operational Processor team, instrument sensitivity studies and software scientific validation as well as participation in the product format definition, orchestration dependency rule maps and ground segment interfaces design.

Project Engineer at DEIMOS Engenharia, Ground Segment Division.

2004-2006

Project Engineer of Phase 2 of SMOS L1 Processor Prototype contract. Work in the design and implementation of the L1 processor prototype for the SMOS satellite, as responsible for L0 to L1a algorithms (interferometric radiometer calibration with a distributed noise injection scheme).

Software Engineer at I&C division, Optical Networks R&D, Siemens Portugal.

2003-2004

Work in Metropolitan (SDH and RPR) and Access (xDSL) networks. Implementation of IGMP protocol, for Video over xDSL management, in HiX 5300 equipment (xDSL Access Concentrator).

Assistant Professor at Department of Science and Information Technology, ISCTE

2003

Teacher on the subjects of Introductory Physics, Electromagnetism and Circuit Theory.

Physics subjects' responsible at E-Learning Team of IST

2002

Responsible for Physics contents production and organization for E-Learning website e-escola.pt.



Doctoral Student at CERN in ALICE experiment's Offline and HMPID groups

1999-2001

Responsible for the design and implementation of all the HMPID (High Momentum Particle Identification) detector offline code, including simulation, reconstruction and data analysis, for the ALICE experiment. Design of an alternative reconstruction algorithm for RICH (Ring Imaging Cherenkov) detectors.

Doctoral Student of Physics, with scholarship from Portuguese Ministry of Science at IST

1998-2002

Responsible for the design and implementation of an image reconstruction algorithm for RICH (Ring Imaging Cherenkov) detectors. Worked in data analysis for the ALEPH experiment at CERN, using Kohonen Maps. Implementation of several Genetic Algorithms and Classifier Systems for proofs of concept.

Member of Semiconductor Technology Group at INESC, IST

1997

Work in plasma diagnostics for thin-film deposition and thin-film Fabry-Perot interferometers. Numerical simulations, sample production and analysis.

Affiliations

Member of SMOS Quality Working Group

2010-present

Member of SMOS L1 Calibration Team

2010-present

IEEE Frequency Allocations in Remote Sensing (FARS) Technical Committee

2010-2012

Member of SMOS Commissioning Team

2009-2010

Member of the NA60 Collaboration (CERN)

2000-2004

Member of the ALICE Collaboration (CERN)

1999-2004

Doctoral Student, CFIF/IST (Center of Fundamental Interactions Physics)

1998-2004

Member of Semiconductor Technology Group at INESC, IST

1997-1998

Publications and Conferences

Journals, reports and magazines

FIVE YEARS OF EARLY DETECTION/QUANTIFICATION WITH TSYS SIGNALS PROVIDED BY THE 69 LICEFS (Eric Anterrieu, Ali Khazaal and José Barbosa)

Poster Presentation for the 2nd SMOS SCIENCE CONFERENCE to be held at ESA-ESAC from May 25th to May 29th, 2015

STATUS OF RFI IN THE 1400-1427 MHZ PASSIVE BAND: THE SMOS PERSPECTIVE (R. Oliva, E. Daganzo, Y. Soldo, Y. Kerr, F. Cabot, P. Richaume, E. Anterrieu, A. Gutierrez, J. Barbosa, G. Lopes)

Paper accepted for 2014 URSI General Assembly and Scientific Symposium, Beijing, China, August 16-23, 2014

SMOS INSTRUMENT PERFORMANCE AND CALIBRATION AFTER 4 YEARS AND 6 MONTHS IN ORBIT

(Manuel Martin-Neira, Ignasi Corbella, Francesc Torres, Juha Kainulainen, Roger Oliva, Josep Closa, François Cabot, Ali Khazaal, Eric Anterrieu, Jose Barbosa, Antonio Gutierrez, Sofia Freitas, Joe Tenerelli, Fernando Martin-Porqueras, Raul Díez-García, Jorge Fauste, Steven Delwart, Raffaele Crapolichio, and Martin Suess)

Paper submitted to EGU 2014, Vienna, Austria, 27 April to 2 May 2014

SAIRPS: A GENERIC SIMULATOR FOR EVALUATION OF SYNTHETIC APERTURE INTERFEROMETRIC RADIOMETERS

(Adriano Camps, Hyuk Park, Yujin Kang, Jose Barbosa, Jorge Bandejas, Paula Vieira, Ana Friacas, Salvatore d'Addio)

Presentation to IEEE International Geoscience and Remote Sensing Symposium 2013, Melbourne (Australia), 21-26 July, 2013

Paper published in Geoscience and Remote Sensing (IGARSS) Proceedings, 2013 IEEE International

SMOS INSTRUMENT PERFORMANCE AND CALIBRATION AFTER 3 YEARS IN ORBIT

(Manuel Martin-Neira, Ignasi Corbella, Francesc Torres, Juha Kainulainen, Roger Oliva, Josep Closa, François Cabot, Rita Castro, Jose Barbosa, Antonio Gutierrez, Eric Anterrieu, Joe Tenerelli, Fernando Martin-Porqueras, Guillermo Buenadicha, Steven Delwart, Raffaele Crapolichio, Martin Suess)

Paper presented to EGU General Assembly 2013, held 7-12 April, 2013 in Vienna, Austria, id. EGU2013-9556

A FIRST SET OF TECHNIQUES TO DETECT RADIO FREQUENCY INTERFERENCES AND MITIGATE THEIR IMPACT ON SMOS DATA (Rita Castro, Antonio Gutierrez, José Barbosa)

Paper published in IEEE Transactions on Geoscience and Remote Sensing 05/2012; 50(5):1440-1447

DETECTION AND MITIGATION OF RADIO FREQUENCY INTERFERENCE IN SMOS DATA

(Rita Castro, Antonio Gutiérrez, Paula Vieira, José Barbosa)

Paper published in IEEE Transactions on Geoscience and Remote Sensing Special Issue in the ESA's Soil Moisture and Ocean Salinity (SMOS) – Instrument Performance and First Results, 2012

A GENERIC SIMULATOR FOR APERTURE SYNTHESIS RADIOMETERS (A. Camps, H. Park, J. Barbosa, J. Bandejas, S. D'Addio)

Published in Geoscience and Remote Sensing Symposium (IGARSS), 2012 IEEE International; 01/2012

REVIEW OF THE IMAGE RECONSTRUCTION TECHNIQUES USED IN SMOS DATA PROCESSING (A. Gutierrez, R. Castro, J. Barbosa, E. Anterrieu)

Geoscience and Remote Sensing Symposium (IGARSS), 2012 IEEE International; 01/2012

SMOS INSTRUMENT PERFORMANCE AND CALIBRATION (M. Martin-Neira, I. Corbella, F. Torres, J. Kainulainen, R. Oliva, J. Closa, F. Cabot, R. Castro, J. Barbosa, A. Gutierrez, E. Anterrieu, J. Tenerelli, F. Martin-Porqueras, G. Buenadicha)

Geoscience and Remote Sensing Symposium (IGARSS), 2012 IEEE International; 01/2012

SMOS RESULTS AND MIRAS EVOLUTION STUDIES

(M. Martín-Neira, M.A. Plaza, I. Corbella, J. Kainulainen, R. Oliva, F. Cabot, F. Torres, J. Closa, F. Martín-Porqueras, J. Tenerelli, R. Castro, A. Gutierrez, J. Barbosa, G. Buenadicha, J. Benito, A. Zurita, E. Daganzo, S. Mecklenburg)

Invited Talk to 3rd Workshop on Advanced RF Sensors and Remote Sensing Instruments, ESA-ESTEC, Noordwijk, September 13th - 15th 2011

RADIO-FREQUENCY INTERFERENCE DETECTION AND MITIGATION ALGORITHMS FOR SYNTHETIC APERTURE RADIOMETERS

(Adriano Camps, Jérôme Gourrion, José Miguel Tarongí, Mercedes Vall-Ilossera, Antonio Gutiérrez, Jose Barbosa, Rita Castro)

Accepted for publication by MDPI Algorithms, 2011, 4, 155-182

SMOS PAYLOAD IN-ORBIT PERFORMANCE

(M. Martín-Neira, I. Corbella, F. Torres, N. Duffo, V. Gonzalez, J. Closa, J. Benito, A. Borges, K. Rautiainen, J. Kainulainen, A. Gutierrez, J. Barbosa, N. Catarino, R. Castro, S. Freitas, H. Candeias, J. Freitas, F. Cabot, E. Anterrieu, M. Zundo, M. Brown, K. McMullan, F. Martín-Porqueras, R. Oliva, N. Wright, R. Caprolicchio)

Poster Session at 11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Washington DC (USA), 1-4 March 2010

ESTIMATING AND ACCOUNTING FOR THE COVARIANCE MATRIX OF THE MIRAS INSTRUMENT ON BOARD SMOS

(Eric Anterrieu, Hervé Carfantan, Manuel Martín-Neira, Jose Barbosa, Rita Martins Castro)

Poster Session at 11th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, Washington DC (USA), 1-4 March 2010

SMOS L1 ALGORITHMS

(Antonio Gutiérrez, José Barbosa, Nuno Catarino, Rita Castro, Sofia Freitas, Bruno Lucas, Henrique Candeias, José Freitas, Marco Ventura, Michele Zundo)

Invited Talk to IEEE International Geoscience and Remote Sensing Symposium 2010, Honolulu (Hawaii), 25-30 July, 2010

Paper published in Geoscience and Remote Sensing (IGARSS) Proceedings, 2010 IEEE International

SMOS PAYLOAD PERFORMANCE ASSESSMENT

(Martín-Neira M., Corbella I., Torres F., Cabot F., Closa J., Kainulainen J., Castro R., Barbosa J., Gutierrez A., Martín-Porqueras F., Oliva R., Anterrieu E., Brown M., McMullan K.)

Presentation to IEEE International Geoscience and Remote Sensing Symposium 2010, Honolulu (Hawaii), 25-30 July, 2010

Paper published in Geoscience and Remote Sensing (IGARSS) Proceedings, 2010 IEEE International

RFI ANALYSIS IN SMOS IMAGERY

(Adriano Camps, Jérôme Gourrion, José Miguel Tarongí, Antonio Gutiérrez, Jose Barbosa, Rita Castro)

Presentation to IEEE International Geoscience and Remote Sensing Symposium 2010, Honolulu (Hawaii), 25-30 July, 2010

Paper published in Geoscience and Remote Sensing (IGARSS) Proceedings, 2010 IEEE International

EXPERIMENTAL VALIDATION OF THE CORBELLA'S VISIBILITY FUNCTION USING HUT-2D AND MIRAS

(F. Martín-Porqueras, J. Kainulainen, M. Martín-Neira, I. Corbella, R. Oliva, R. Castro, J. Barbosa and A. Gutierrez)

Presentation to IEEE International Geoscience and Remote Sensing Symposium 2010, Honolulu (Hawaii), 25-30 July, 2010

Paper published in Geoscience and Remote Sensing (IGARSS) Proceedings, 2010 IEEE International

L1PP PERFORMANCE ANALYSIS FOR SMOS IN ORBIT COMMISSIONING PHASE

(R. Castro, R. Oliva, A. Gutiérrez, J. Barbosa, S. Freitas, M. Zundo, M. Martín-Neira, E. Anterrieu, A. Camps)

Presentation to the ESA Living Planet Symposium, Bergen (Norway), 28 June – 2 July, 2010

SMOS PAYLOAD COMMISSIONING PLAN

(M. Martín-Neira, M. Brown, F. Martín Porqueras, J. Closa, I. Corbella, J. Kainulainen, J. Barbosa, F. Cabot)

Presentation to the ESA Living Planet Symposium, Bergen (Norway), 28 June – 2 July, 2010

IN-ORBIT PERFORMANCE OF THE SMOS REFERENCE RADIOMETERS - RESULTS FROM THE COMMISSIONING PHASE

(J. Kainulainen, M. Martín-Neira, J. Barbosa, R. Castro)

Presentation to the ESA Living Planet Symposium, Bergen (Norway), 28 June – 2 July, 2010

WEIGHTING MATRICES APPLIED IN IMAGE RECONSTRUCTION ALGORITHM IN L1PP AND THEIR IMPACT ON SOIL MOISTURE RETRIEVAL

(Castro, R., Barbosa, J., Anterrieu, E., Cabot, F. and Richaume, P.)



Presentation to the ESA Living Planet Symposium, Bergen (Norway), 28 June – 2 July, 2010

SMOS CALIBRATION IMPACT ON SCIENTIFIC DATA

(Oliva, Roger; Castro, Rita; Gutiérrez, Antonio; Barbosa, Jose; Martin-Neira, Manuel; Zundo, Michele; Cabot, François; Reul, Nicolas)
Paper presented to EGU General Assembly 2010, held 2-7 May, 2010 in Vienna, Austria, p.12126

SMOS L1PP PERFORMANCE ANALYSIS WITH MIRAS DATA FROM VALIDATION CAMPAIGNS

(Rita Castro, José Barbosa, Henrique Candeias, Nuno Catarino, José Freitas, Sofia Freitas, Antonio Gutiérrez, Bruno Lucas)
Presented at EGU 2009, Vienna, Austria, 19 to 24 April 2009
Published in Geophysical Research Abstracts, Vol 11, EGU2009-8644, 2009

SMOS L1 PROCESSOR PROTOTYPE: FROM DIGITAL COUNTS TO BRIGHTNESS TEMPERATURES

(Antonio Gutiérrez, José Barbosa, Nuno Almeida, Nuno Catarino, José Freitas, Marco Ventura, José Reis, Michele Zundo)
Presented at IGARSS 2007, Barcelona, Spain, 23 to 27 July 2007
Published in IEEE Transactions on Geoscience and Remote Sensing IGARSS 2007 Special Issue, 2007

THE CSI-BASED RICH DETECTOR ARRAY FOR THE IDENTIFICATION OF HIGH MOMENTUM PARTICLES IN ALICE.

(D. Cozza, G. De Cataldo, D. Dell'Olio, L. Dell'Olio, D. Di Bari, A. Franco, B. Ghidini, L. Liberti, P. Majewski, C. Pastore, F. Posa, E. Nappi, U. Fratino, Y. Andres, A. Braem, M. Davenport, A. Di Mauro, D. Fraissard, W. Klempt, A. Morsch, P. Martinengo, G. Paic, F. Piuz, J.C. Santiard, E. Schyns, J. van Beelen, J. Barbosa, J. Seixas, M. Golubeva, F. Guber, A.B. Kurepin, V. Razin, A. Reshetin, K. Shileev, V. Tiflov, S. Igolkin, K. Kadija (INFN, Bari & Bari U. & Bari Polytechnic & CERN & Lisbon, IST & Moscow, INR & Boskovic Inst., Zagreb))
Published in Nucl.Instrum.Meth.A502:101-107, 2003

R&D IN ALICE: THE CSI-BASED RICH HIGH MOMENTUM PARTICLE IDENTIFICATION DETECTOR.

(Y. Andres, J. Barbosa, A. Braem, E. Carrone, D. Cozza, M. Davenport, G. De Cataldo, D. Dell'Olio, D. Di Bari, A. Di Mauro, D. Fraissard, A. Franco, U. Fratino, F. Guber, S. Igolkin, A. Kurepin, L. Liberti, P. Martinengo, A. Morsch, E. Nappi, G. Paic, F. Piuz, F. Posa, V. Razin, A. Reshetin, J.C. Santiard, E. Schyns, J. Seixas, K. Shileev, V. Tiflov, J. van Beelen, T.D. Williams (CERN & INFN, Bari & Bari U. & Moscow, INR & Lisbon, IST)). 2002. 7pp.
Published in Eur.Phys.J.direct C4S1:25, 2002

HEAVY QUARK MEASUREMENTS WITH ALICE. By ALICE Collaboration

(P. Crochet for the collaboration).
CERN-ALICE-PUB-2001-57, Dec 2001. 13pp.
Published in Eur. Phys. J. direct A1:1-11, 2001

STUDY OF THE QUANTUM EFFICIENCY OF CSI PHOTOCATHODES EXPOSED TO OXYGEN AND WATER VAPOUR.

By ALICE Collaboration (A. Di Mauro et al.).
CERN-ALICE-PUB-2000-014, CERN-ALI-2000-014, May 2000.
3pp. Published in Nucl. Instrum. Meth. A461:584-586, 2001

STUDIES FOR THE OPTIMIZATION OF THE HMPID CsI RICH DETECTOR

(J.Barbosa, A.DiMauro, A.Morsch, E.Nappi, G.Paic, F.Piuz, D.Cozza, D.DiBari)
ALICE-INT-2000-26, 2000

INFLUENCE OF THE TOF AND TRD DETECTORS IN MATCHING TRACKS FROM TPC TO HMPID

(J.Barbosa, D.Cozza, D.Di Bari, A.Di Mauro, D.Elia, A.Morsch, E.Nappi, G.Paic)
ALICE-INT-2000-06. 2000

A LARGE AREA CSI RICH DETECTOR IN ALICE AT LHC.

By ALICE Collaboration (D. Di Bari et al.). 1999.
Published in Nucl. Phys. Proc. Suppl. 78:337-341, 1999

A PATTERN RECOGNITION METHOD FOR THE RICH-BASED HMPID DETECTOR IN ALICE.

By ALICE HMPID Collaboration (D. Elia et al.).
1999. Published in Nucl. Instrum. Meth. A433:262-267, 1999



RECOGNITION OF CHERENKOV RING PATTERNS WITH THE HMPID-RICH DETECTOR IN ALICE AT LHC.

By ALICE Collaboration (D. Cozza et al.). 1999.
Published in Nucl. Phys. A661:702-706, 1999

THE STUDY OF HEAVY ION COLLISIONS WITH THE ALICE DETECTOR AT THE LHC.

By ALICE Collaboration (A. Buijs for the collaboration).
1999. Given at 10th International Symposium on Very High-Energy Cosmic Ray Interactions (ISVHECRI 98), Assergi, Italy, 12-17 Jul
1998. Published in Nucl. Phys. Proc. Suppl. 75A:200-202, 1999

PERFORMANCE OF LARGE AREA CSI RICH PROTOTYPES FOR ALICE AT LHC.

By ALICE Collaboration (A. Di Mauro et al.).
CERN-EP-99-52, Feb 1999. 16pp. Presented at 3rd International Workshop on Ring Imaging Cerenkov Detector (RICH 98), Ein Gedi, Dead Sea, Israel, 15-20 Nov 1998.
Published in Nucl. Instrum. Meth. A433:190-200, 1999

THE CSI BASED RING IMAGING DETECTOR FOR THE ALICE EXPERIMENT: TECHNICAL DESCRIPTION OF A LARGE PROTOTYPE.

By ALICE Collaboration (F. Piuz et al.). CERN-EP-99-055, CERN-EP-99-55,
Mar 1999. 18pp. Presented at 3rd International Workshop on Ring Imaging Cerenkov Detector (RICH 98), Ein Gedi, Dead Sea, Israel, 15-20 Nov 1998.
Published in Nucl. Instrum. Meth. A433:222-234, 1999

FINAL TESTS OF THE CSI BASED RING IMAGING DETECTOR FOR THE ALICE EXPERIMENT.

By ALICE Collaboration (F. Piuz et al.).
CERN-EP-99-033, CERN-EP-99-33, Mar 1999. 18pp. Presented at 3rd
International Workshop on Ring Imaging Cerenkov Detector (RICH98), Ein Gedi, Dead Sea, Israel, 15-20 Nov 1998.
Published in Nucl. Instrum. Meth. A433:178-189, 1999

A CELLULAR AUTOMATA ALGORITHM FOR PATTERN RECOGNITION IN HMPID. THE ALICE CASE STUDY

(J. Barbosa, R. Carvalho, J. Seixas)
Proceedings of the 6th International workshop on software engineering, artificial intelligence and expert systems, Crete 1998.

Courses and Seminars Given

Electromagnetism, at ISCTE, Lisbon, Portugal	2003
Circuit Theory, at ISCTE, Lisbon, Portugal	2003
Introduction to Engineering, at ISCTE, Lisbon, Portugal	2003