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UT Austin | Portugal

**UT Austin
and Portugal
Building the future**

February, 16, 2018
UPTEC

Purpose

The “UT Austin and Portugal – Building the Future” workshop aims to present the opportunities and challenges brought by the third phase of the Program, from 2018 to 2030. In a dialogue with the scientific and entrepreneurial community, the workshop will address the following themes: the enabling role that Advanced Computing infrastructures and services play in advancing the state of the art of a multitude of scientific areas, the scientific and economic potential of Space and Earth Observation research, and the role of the University Technology Enterprise Network (UTEN) as a leverage to foster commercialization of Nano Materials to global markets.

Over the past decade, the UT Austin | Portugal Program has achieved remarkable scientific results while supporting the technology commercialization success of Portuguese researchers, innovators, and entrepreneurs.

UT Austin and Portugal Building the future

February, 16, 2018
UPTEC

10h30
Reception

11h00

13h00

Welcome words

Rui Oliveira (INESC TEC)
Marco Bravo (UTA)

Harnessing advanced computing in Science and Business

keynote:

Dan Stanzione (TACC)
– How TACC enables
domain specific
research

light **lunch**
talk

with:

Brian Korgel (UTA)
– Foster
commercialization
of Nano Materials
to global markets

14h00

16h00

Space and Earth Observation Research

Closing remarks

John Ekerdt (UTA)

keynote:

Burke Fort (UTA-CSR)
– Atlantic Spaceport
Center feasibility study

Welcome words

Rui Oliveira (INESC TEC)

Marco Bravo (UTA)

Rui Oliveira holds a Ph.D. in Computer Science by the École Polytechnique Fédérale de Lausanne. He is Associate Professor with Aggregation at the Informatics Department of University of Minho and, researcher and member of the board of INESC TEC. His research interests are on large-scale distributed systems, in particular on fault-tolerant agreement protocols, and on exascale and secure data management. He participated and coordinated more than 10 research projects and is currently the coordinator of the EU H2020 SafeCloud project. He serves on the steering committees of IEEE SRDS, IFIP/ACM/USENIX Middleware, IFIP DAIS, Global CENTRA and the Atlantic International Research Centre. He is executive director of the Minho Advanced Computer Center and vice-chair of IFIP WG 6.1.



Marco Bravo is the Executive Director of the UT Austin|Portugal Program at The University of Texas at Austin and also the Executive Director of the National Science Foundation's Southwest Innovation Corps (I-Corps) Node at the Office of the Vice President for Research. His expertise focuses on entrepreneurial wealth creation, international innovation, and global technology commercialization. He is an engineer with diverse international experience and education, as well as significant leadership and managerial experience in multinational business, consulting, academia, government, and startups with extensive cross-cultural literacy in Europe and the United States. As an entrepreneur, Marco has co-founded three companies, with one successful exit, and a business angel fund, and actively mentored 300+ technology startups and entrepreneurs from multiple countries to date. Mr. Bravo is currently a Ph.D. pre-candidate in Mechanical Engineering at Cockrell School of Engineering at The University of Texas at Austin, and has received multiple academic and industry accolades and awards throughout his career.



Harnessing advanced computing in Science and Business

keynote:

Dan Stanzione (TACC) — How TACC enables domain specific research

Discussants from different scientific domains:

Physics, Biology, Polymers, Atmospheric Modelling, and Astrophysics

Albano Beja-Pereira (UP),
Alfredo Rocha (UA),
Anabela Oliveira (LNECC),
Carlos Andrade (GALP),
João Miguel Nóbrega (UM),
Lino Santos (FCCN),
Luís Oliveira Silva (IST),
Paulo Silva (UC).

Dan Stanzione is the Executive Director of the Texas Advanced Computing Center (TACC) and Associate Vice President for Research at The University of Texas at Austin since July 2014, previously serving as Deputy Director. He is the principal investigator (PI) for a National Science Foundation (NSF) grant to deploy and support Stampede2, a large scale supercomputer, which will have over twice the system performance of TACC's original Stampede system. Stanzione is also the PI of TACC's Wrangler system, a supercomputer for data-focused applications. For six years he was co-director of CyVerse, a large-scale NSF life sciences cyberinfrastructure. Stanzione was also a co-principal investigator for TACC's Ranger and Lonestar supercomputers, large-scale NSF systems previously deployed at UT Austin. Stanzione received his bachelor's degree in electrical engineering and his master's degree and doctorate in computer engineering from Clemson University.



Albano Beja Pereira is a Principal Investigator and leader of the agrigenomics research group at CIBIO/InBIO - University of Porto. His main research area is population genomics and conservation of livestock species. Currently, he is using population genomics computational tools to mining the genomes of locally adapted and resilient livestock populations to identify the molecular bases for environmental adaptation and, reconstitute the evolutionary history of livestock species, their parasites, and wild ancestors. Currently, he serves on the Review Editorial Board of the Livestock Genomics section of the journal *Frontiers on Genetics* and is associated editor of *BMC veterinary Sciences*. He is invited Assistant Professor (part-time) at the faculty of Sciences of University of Porto and, is an instructor and founder of an international course on Conservation and Population Genomics Data Analyses (ConGen), that annually takes place in Missoula, MT, USA.



Alfredo Rocha is Associate Professor with Aggregation at the University of Aveiro. He is lecturer in the Physics Department, Course Director and lecturer of Licenciatura in Meteorology, Oceanography, and Geophysics. Lecturer in MSc of Atmospheric and Marine Sciences. He is also a researcher in the Centre for Environmental and Marine Studies (CESAM) with 37 years of experience in meteorology and climate. He participated in research and development projects and is a consultant for the Institute of Environment and Development (IDAD). Prof. Alfredo Rocha is founder and responsible of the Numerical Weather Forecasting operational portal and responsible for the service contract with REN (Rede Eléctrica Nacional) to supply daily wind and wind power forecasts for all wind farms in mainland Portugal. Prof. Alfredo Rocha has worked as a meteorologist at Institute of Meteorology of Mozambique (INAM) and as a researcher at the Commonwealth Scientific and Industrial Research Organization (CSIRO) - Division of Atmospheric Research - in Australia. His activity is consolidated by more than 200 scientific articles and communications, 83 scientific paper reviews, 15 participations in evaluation panels of research projects/fellowships, 20 participations in research projects and 18 Ph.D., 30 MSc and 37 first degree student supervisions. His present research interests include numerical weather forecasting, climate and climate change and the evaluation of wind, solar and hydro resources for energy purposes working in joint projects with energy related enterprises such as EDP, REN, Megajoule and Smartwatt, amongst others.



Anabela Oliveira is a senior researcher at LNEC and the coordinator of the Information Technology in Water and Environment Research Group. She has a Degree in Civil Engineering and a MSc and a Ph.D in Environmental Science and Engineering from the Oregon Health Science University (USA). Her research interests are real time monitoring forecast systems, HPC computing, data reliability and Web platforms for risk and emergency in water systems. She has published 65 SCIE-indexed papers and has an h-index of 19.



Carlos Martins Andrade is the Galp Energia Head of Innovation Research & Technology. Experiencing more than twenty years in the gas business development in Portugal and Spain, Carlos Martins is now responsible for Galp Energia Innovation Research & Technology area since April 2014. Holding a Mechanical Engineering degree from the Universidad Simón Bolívar in Venezuela and an MBA from Instituto de Empresa in Madrid, Spain, he started his career in the gas industry as Project Manager in a Spanish Engineering Company in 1992. Later, in 1998, he joined Lusitaniagás, a Portuguese Regional Distribution Company, as Technical Manager and in 2001 he was appointed as Technical Manager for Galp Energia natural gas distribution assets. In 2007, he was nominated Chairman of the Board of three Portuguese Local Distribution Companies owned by Galp Energia. In 2009 he moved to the E&P area and was responsible for the LNG Projects.



João Miguel Nóbrega is Associate Professor at the Polymer Engineering Department of the University of Minho, and member of the Institute for Polymers and Composite, a research unit from the Institute of Nanostructures, Nanomodelling, and Nanofabrication Associated Laboratory. In 2004, he received his Ph.D. degree in Polymer Science and Engineering from the University of Minho. He is the vice-president of the Portuguese Society of Rheology, executive editor of The Ibero-American Journal of Rheology, editor of OpenFOAM@ Wiki and a founder member of the OpenFOAM@ Technology Portuguese Users Group. His research activity lies on three overlapping areas: product development, polymer processing and material rheology. For this purpose, he has been developing computational rheology tools to model the flow of complex fluids in various polymer processing techniques. Regarding the product development area, he has been involved on the design and manufacture of polymeric products for several fields, comprising applications for health, textile, sensing/monitoring, construction and mobility. In 2014, Miguel Nóbrega joined the OpenFOAM@ Extend community, focusing, since then, its main numerical developments in this open source computational library. In 2016, he was the chair of the 11th Workshop OpenFOAM, which took place in Guimarães, Portugal. He is involved in the supervision/co-supervision of 9 Post-Doc Researchers, 10 Ph.D. Thesis (7 completed), 30 MSc Thesis, in 25 scientific research projects (2 as principal investigator) and 35 applied research projects for private companies (11 as principal investigator).



Lino Santos has a master in Law and Security from Nova Law School and a degree in Systems Engineering from Minho University. He currently works in Advanced Computing and Security at FCT, I.P. From 2014 until 2017 he was Head of Operational Services at National Cybersecurity Center. From 2008 until 2014 he was Director on Security and User services at National Foundation for Scientific Computing, Head of CERT.PT, the national Computer Emergency Response Team, and national liaison officer at ENISA.



Luís O. Silva is Professor of Physics at Instituto Superior Técnico, Lisbon, Ph.D. and Habilitation from IST, and post-doc at UCLA (1997-2001). He was awarded two ERC Advanced Grants, among other prizes/honors. He is Fellow of the American Physical Society, Global Young Academy, and the European Physical Society.



Paulo J. Silva has graduated in Physics / Applied Mathematics from the University of Porto in 1998, and completed a Master Degree (2002) and a Ph.D. (2008) in Theoretical Physics from the University of Coimbra. He has been a post-doc at the University of Edinburgh from 2008 to 2010, and since then he has been a post-doctoral fellow at the University of Coimbra. His research activity has been centered in the lattice formulation of Quantum Chromodynamics (QCD). Research topics have been diverse, ranging from the infrared behaviour of QCD Green's functions, to algorithms for Landau gauge fixing and dynamical fermion simulations, and to effective models for QCD using lattice input.



**light lunch
talk**

with:
Brian Korgel (UTA)
— Foster
commercialization
of Nano Materials
to global markets

Brian A. Korgel is the Edward S. Hyman Chair in Engineering and T. Brockett Hudson Professor of Chemical Engineering at the University of Texas at Austin. He directs the Industry/University Research Center for Next Generation Photovoltaics and is Education Director for the UT Austin Materials Research Science and Engineering Center. He is also Associate Editor of Chemistry of Materials. He has published more than 250 papers, working on research in nano & mesoscopic materials and complex fluids focused on problems in energy storage, chemical transformations, energy harvesting and conversion, and medicine. He is also an artist, exploring language and human/technology cohabitation. He has co-founded two companies, Innovalight and Piñon Technologies, and received various honors including the Professional Progress Award from the American Institute of Chemical Engineers (AIChE) and election to the National Academy of Engineering (NAE).



Space and Earth Observation Research

keynote:

Burke Fort (UTA-CSR) — Atlantic Spaceport Center feasibility study

Discussants from different scientific domains:

Climate and Earth system modeling, Astronomy, Ocean Robotics, Aeronautics, and Space Software Systems

André Guerra (CEIIA),
Aníbal Matos (UP),
Luísa Bastos (UP),
Patrick Heimbach (UTA),
Pedro Camanho (UP),
Nuno Silvas (Deimos).

Burke Fort is the Associate Director of the University of Texas Center for Space Research and is the Project Manager of the recently completed Atlantic Spaceport Center Feasibility Assessment. An attorney by training, Mr. Fort is responsible for Research and Business Development, as well as all administrative functions, within his research center. In addition to the spaceport feasibility study, he is also the Project Manager of the McDonald Geodetic Observatory, which when completed will be the United States' third fundamental station within the Global Geodetic Observatory System. Mr. Fort is an Awardee of the NASA Public Service Medal for the creation and operation of NASA's Reduced Gravity Student Flight Opportunities Program, which enabled hundreds of university and high school students to fly with their experiments in NASA's parabolic flight microgravity laboratory aircraft. He is also the recipient of the Genesis Award, which recognized his 8th Continent Project space-related technology commercialization initiative as "2009 Economic Developer of the Year" within the Denver, Colorado, area.



André Guerra is currently a Product Development Engineer at the Aerospace & Ocean Engineering department of CEiiA – a Portuguese Centre of Engineering and Product Development, being presently involved in several Research, Development and Engineering projects within the space arena. In parallel, André is also finishing his Ph.D. in physics, at the Faculty of Sciences of the University of Porto, focused in small satellites and their integration with other in-situ assets for oceanography studies. Besides working in a collaboration to bring satellite communications to a network of autonomous vehicles, with the LSTS (Underwater Systems and Technology Laboratory of University of Porto), he has also performed several thermal analyses of small satellites and their components for CINAIE (Centro de Innovación Aeroespacial de Galicia) in Vigo (Spain). André holds a MSc in Aerospace Engineering from Instituto Superior Técnico of Lisbon (Portugal).



Aníbal Matos received a Ph.D. in Electrical and Computer Engineering from University of Porto in 2001. He is currently coordinator of the Centre for Robotics and Autonomous Systems at INESC TEC and also an assistant professor at the Faculty of Engineering University of Porto. His main research interests are related to perception, sensing, navigation, and control of autonomous marine robots, being the author or co-author of more than 80 publications in international journals and conferences. He has participated and lead several research projects on marine robotics and its application to monitoring, inspection, search and rescue, and defense.



Lufsa Bastos is Principal Researcher at the Faculty of Sciences of the University of Porto. She holds a Ph.D. in Surveying Engineering from the University of Porto (1991). She has worked in Satellite Positioning and Navigation for more than 30 years, with special interest on the development of GNSS applications for precise positioning, navigation, environmental monitoring and geo-information services. Recently her research is focused on GNSS based technologies, including the development of GNSS/INS based systems, for strapdown airborne gravimetry, mobile mapping and also low-cost GNSS/MEMS systems for UAVs and buoys, for monitoring coastal and ocean dynamics. She has been involved in the establishment of the RAIA oceanic observatory and is presently interested in the development of multi-sensor marine technologies for sea-level, currents and wave height monitoring. She is the Director of the Astronomical Observatory of the Faculty of Sciences since 1997 and Head of the Coastal and Ocean Dynamics group at the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR) since 2002.



Patrick Heimbach is Associate Professor at the University of Texas at Austin with tenure in the Department of Geological Sciences. He is a member of the core faculty at the Institute for Computational Engineering and Sciences (ICES) and holds joint faculty appointments in the Jackson School of Geosciences (JSG) and the Institute for Geophysics (UTIG). At ICES, he is the fellow of the W. A. "Tex" Moncrief, Jr., endowed chair III in Simulation-Based Engineering and Sciences. Previously, he has worked for 16 years in MIT's Department of Earth, Atmospheric and Planetary Sciences (EAPS), most recently as Senior Research Scientist and currently as Visiting Associate Professor. Prof. Heimbach's main research interest is understanding the general circulation of the ocean and its role in the global climate system. Since 2016, he serves on the US National Academy of Sciences' Ocean Studies Board and the National Research Council's Committee on "Sustaining Ocean Observations to Understand Future Changes in Earth's Climate". Prof. Heimbach also serves on the National Science Foundations Advisory Committee for the Office of Polar Programs and the Office for Advanced Cyberinfrastructure. Since 2017, he co-chairs the international Deep Ocean Observing Strategy (DOOS) program and serves on the CLIVAR/CliC/SCAR Southern Ocean Region Panel (SORP), the Northern Ocean Regional Panel (NORP), and the CLIVAR Decadal Climate Variability and Predictability (DCVP) working group. He is a science team member of NASA's Surface Water & Ocean Topography (SWOT), Gravity Recovery And Climate Experiment (GRACE), and NASA's Sea Level Change Team (N-SLCT), as well as member of the US AMOC science team.



Pedro Camanho is Full Professor at the Department of Mechanical Engineering of the University of Porto and Vice-President of INEGI. His main research interests are the mechanics of deformation and fracture of advanced polymer composite materials, and new concepts for lightweight composite materials for aerospace applications such as hybrid, nano-structured, and ultra-thin composites. Camanho has been a Visiting Scientist at NASA-Langley Research Center since 2000, and was a Visiting Scientist at the U.S. Air Force Research Laboratory. He was a Royal Society Visiting Professor at Imperial College London (2005) and a Visiting Professor at the Laboratoire de Mécanique et Technologie, Ecole Normale Supérieure de Cachan (2014). He coordinated several research projects funded by the European Space Agency, Airbus, NASA, Embraer, Daimler AG, Aernnova, European Union, FCT, and US Air Force. Pedro Camanho is the recipient of the 2006 NASA H.J.E. Reid Award for Outstanding Scientific Paper, of the 2005 Young Researcher in Applied and Computational Mechanics Award from the Portuguese Association of Theoretical, Applied and Computational Mechanics, the 2005-2009 Engineering Fracture Mechanics Most Cited Articles Award, and the 2016 Mechanics of Materials Highly Cited Research Award. Pedro Camanho is a member of the Advisory Board of the European Mechanics Society (EUROMECH). He is also a member of the Council of the European Society for Composite Materials (ESCM), and of the Engineering Panel of the European Research Council (ERC). Pedro Camanho is former Director of the MIT-Portugal Engineering Design and Advanced Manufacturing (EDAM), focus area doctoral program in Leaders for Technological Industries, and is External Examiner of the MSc in Composite Materials course from the Department of Aeronautics, Imperial College London.



Nuno Silva has more than 15 years experience in Project Management and Flight System architecture for large ESA space mission, such as EXOMARS Rover, Solar Orbiter, and launchers. He is currently senior technical manager at Deimos Engenharia Flight Systems division.



Closing remarks

John Ekerdt (UTA)

John G. Ekerdt is Associate Dean for Research in Engineering, with responsibility for sustaining and growing the research portfolio and for facilities, and the Dick Rothwell Endowed Chair in Chemical Engineering at the University of Texas at Austin. He served as Chemical Engineering Department Chair from 1997-2005. He has more than 300 refereed publications, two books and three book chapters, and seven U.S. patents. He has supervised 50 Ph.D. and 9 M.S. students. Using chemical and kinetic probes to unravel reaction pathways, mechanisms and reaction rates, his research has explored: 1) the kinetics of single crystal, nanoparticle and ultrathin film growth, 2) the chemistry that controls film and nanoparticle nucleation on surfaces, and 3) the relationships between precursor molecular structure, its reactivity and the properties of the electronic material that is grown. Current research interests focus on the surface, growth and materials chemistry of metal, dielectric and perovskite films and nanostructures.



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