

**Nuno Leonardo**

Laboratório de Instrumentação e Física Experimental de Partículas  
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**EMPLOYMENT**

Since 2014 Researcher, Principal Investigator, LIP-Lisbon (Portugal)  
2009–2013 Research Scientist, Physics Department, Purdue University (USA)  
2006–2008 Research Fellow, Physics Department, CERN (Switzerland)  
1999–2006 Research Assistant, Laboratory for Nuclear Science, MIT (USA)  
1996–1998 Invited Teaching Assistant, Mathematics Department, IST (Portugal)

**EDUCATION**

**PhD, Experimental Physics, Massachusetts Institute of Technology (United States), 2006**

Dissertation: *Discovery of  $B_s$  oscillations*

(Experiment: Collider Detector at Fermilab, Tevatron collider; supervisor: C.Paus)

**MSc, Mathematics, University of Cambridge (United Kingdom), 1999**

Part III of the Mathematical Tripos, DAMTP and Gonville & Caius College

(Certificate of Advanced Study, Masters degree by examination)

**Licenciatura, Engenharia Física Tecnológica, Instituto Superior Técnico (Portugal), 1998**

Dissertation: *Application of artificial neural networks to CMS trigger*

(Experiment: Compact Muon Solenoid, LHC collider; supervisor: J.Varela)

**COORDINATION / RECOGNITION FOR RESEARCH**

Since 2014 Convener of the B Physics Group (CMS L2 Physics Coordination) <sup>1</sup>  
2013, 2014 Coordinator (L3), Physics analysis subgroup, Rare decays and CP violation, CMS  
2012 Coordinator (L3), Physics analysis subgroup, Exclusive B decays, CMS  
2011, 2012 Coordinator, Upsilon suppression analyses, Heavy Ion Group, CMS  
2009–2011 Coordinator, Upsilon production analyses, Quarkonium task force, CMS  
2008 Convener (L2), Detector Performance Group (DPG), CMS Trigger hardware system  
2007–2011 Coordinator (L3), Trigger performance validation, CMS Trigger software system

**AWARDS**

FCT Investigador award<sup>2</sup>, Development Grant (highest classification, 9/9), Portugal (2013); prior to joining LIP, short listed for faculty positions <sup>3</sup> for research in areas of beyond SM searches, heavy flavor, and heavy ion; CERN research fellowship (2006–2008); Calouste Gulbenkian Foundation fellowship (2002); Luso-American Foundation fellowship (2001); K.T. Compton fellowship, MIT (2001); Doctoral fellowship, FCT, Portugal (1998–2002); LIP scholarship for research at CERN (1998); the highest ranking student of the physics degree at IST (class of 1993–1998).

<sup>1</sup> first researcher from a Portuguese institution to lead a physics group (physics coordination level-2) of an LHC collaboration

<sup>2</sup> for "the creation of talent basis of scientific leaders [...] across all scientific areas and nationalities"

<sup>3</sup> at Oxford University, Northwestern University, Syracuse University, University of Illinois at Chicago

## LEAD AUTHOR & REFEREEING

- Principal authorship and coordination of physics analyses, measurements and searches in the areas of heavy flavor, heavy ions, and scenarios beyond the standard model of particle physics
- Editor of several well-cited, peer-reviewed publications
- Referee of Phys. Lett. B (Elsevier)
- Referee of New Journal of Physics (IOP)
- Member of the CMS B Physics and Top Publication Board
- Member of Analysis Review Committees (ARC) in B, quarkonium, heavy-ion, forward, exotica
- Internal reviewer of about all CMS B physics and quarkonium measurements

## DETECTOR & OPERATIONS

- HL-LHC ("Phase2") CMS detector upgrade. Track trigger project. Feasibility studies.
- Online data monitoring and offline software validation; CMS (2007-2011)
- High-level trigger (software) system. Trigger algorithm performance; CMS (2008-2011)
- Hardware trigger system. Subsystems integration and commissioning; CMS (2006-2009)
- Data acquisition, event-builder system (hardware modules) and level-3 trigger (software); system operator; maintenance, development, upgrades; CDF (2001–2006)
- Online computing farm; hardware installation and cabling; system operator; system administrator; hardware and software maintenance, development, upgrades; CDF (2001-2006)
- Detector operations: EVB&L3 systems responsible, expert/shifter/on-call; detector and system commissioning beginning Tevatron Run2; wrote manuals and reference guides of the systems; provided regular training sessions and tutorials for rotating online shift crews; CDF (2001-06)
- TOF-time of flight; detector assembly, testing and installation on the CDF Experiment (2000)
- Many control room based shifts, data-taking operations, monitoring, CDF & CMS (since 2000)
- Full-time research based at the CERN Laboratory, Geneva, Switzerland (1998, 2006–14)
- Full-time research based at the FNAL Laboratory, Chicago, US (2001–2006)

## EXPERIMENTAL COLLABORATIONS

**CMS**, Compact Muon Solenoid, Large Hadron Collider, CERN, Europe (since 1997)

**CDF**, Collider Detector at Fermilab, Tevatron Collider, FNAL, United States (since 1999)

## RESEARCH GRANTS

FCT, Exploratory Project (PI: N.Leonardo)

Probing new physics using muon pairs and heavy flavor at the LHC  
IF/01454/2013/CP1172/CT0003 (2014-2018)

FCT, Common LIP-CMS Project (PI: J.Varela)

Scope: institute participation in CMS (2014-)

EU, network INFIERI (PI: A.S.Navarro)

European ITN project FP7-PEOPLE-2012-ITN  
Scope: detector upgrade HL-LHC (2014-)

US-DOE, Common Purdue-CMS (PI: I.Shipsey)

Scope: institute participation in CMS (2009-13)