

José Ricardo Morais Silva Gonçalves

European Organisation for Nuclear Research
B32 2-B08 PH-UAT
CERN CH-1211
Genève 23
Switzerland

Royal Holloway
University of London
Physics Department
Egham TW20 0EX
United Kingdom

e-mail: r.goncalo@rhul.ac.uk
tel.: +41 (0)22 76 760 77

Education

2003 Ph.D. in High Energy Physics - Imperial College London
1998 Master in Technological Physics - University of Coimbra, Portugal
1999 Degree in Engineering Physics - University of Coimbra, Portugal
4th year at the Université de Genève (Erasmus programme)

Fellowships

1999 - 2003 Doctoral Scholarship from the Portuguese Ministry of Science
1997 - 1999 Research initiation grant from the Laboratory for Instrumentation
and Experimental Particle Physics (LIP), Portugal

Positions of responsibility

2008 - On-call expert for the ATLAS trigger offline monitoring and the e/γ trigger
selection algorithms
2008 - Trigger representative in task force designing the ATLAS
Derived Physics Data format
2007 - Trigger contact person for the ATLAS Higgs working group
2007 - Co-coordinator of the ATLAS Trigger Software Validation
2003 - 2007 Co-organiser of the Particle Physics Group seminars in Royal
Holloway

Current research

I am working in both feasibility studies of **Higgs searches** and on the development of **high-level trigger** software in the **ATLAS** experiment.

My contribution to the ATLAS High-Level Trigger (HLT) software has been both on the development of online algorithms and on the development of the physics-user interface to trigger data. In the former area, I have contributed to the online software for the selection of events containing high-transverse momentum electrons and photons. In the area of trigger-user interface, I have made a leading contribution to the software infrastructure which enables the use of trigger data in physics analyses. I have fulfilled the role of trigger release coordinator. I have also contributed to the ATLAS trigger in several leading and organisation capacities.

Within the physics feasibility studies, I have developed an analysis of the associated production of Higgs bosons and top-quark pairs, **ttH**, in which the Higgs decays invisibly, relevant to several scenarios of physics beyond the Standard Model. I have achieved a significant enhancement of the signal to background ratio in this channel with respect to previous analyses. I have also contributed to the development of an analysis of **ttH** production with the Higgs decaying to a *b*-quark pair, and studies for other channels.

ZEUS:

My PhD research subject was the analysis of the high- Q^2 neutral current deep inelastic scattering (DIS) data collected by the ZEUS experiment in 1998-2000. In this analysis I measured the **neutral current DIS cross sections** for e^-p and e^+p , as well as the **structure functions** F_2 and xF_3 , which characterise the quark content of the proton.

MICE

Immediately after completing my PhD, I have participated briefly in the Muon Ionisation Cooling Experiment (MICE) where I have helped build a prototype scintillating-fibre tracking detector.

Detector development:

During my Masters degree in Technological Physics, my research work focused on the study and development of **microstructure** gaseous detectors. This was aimed at the development of a fast, high-resolution, X-ray detector for synchrotron radiation sources, using **microgap chambers (MGC)** and on **gas electron multipliers (GEM)**.

Conferences talks

- International Conference on High-Energy Physics, 2008, Philadelphia, *SM Higgs Searches at the LHC*, on behalf of ATLAS and CMS
- European Physical Society High-Energy Physics conference, 2007, Manchester, *The ATLAS Trigger: High-Level Trigger Commissioning and Operation during Early Data Taking*, on behalf of ATLAS TDAQ
- IEEE Nuclear Science Symposium, 2005, Puerto Rico, *Overview of the High-Level Trigger Electron and Photon selection for ATLAS*, on behalf of the ATLAS TDAQ;

Organisation

- Led session in Trigger Data Quality Workshop at CERN in June 2008
- Leading and organisational role in Trigger Robustness Workshop at CERN in March 2008
- Trigger Validation Workshop at CERN in November 2009
- Led session on Trigger-Aware Analysis tutorial at CERN in March 2007;
- Co-organised the Royal Holloway Particle Physics Group seminars - 2004-2005

Teaching

- Mathematical Methods (practical courses), 2005/06;
- Stellar Astrophysics (demonstrating), 2005/06;

Outreach

- Contributions to online science outreach journal *Ciência Hoje* (<http://www.cienciahoje.pt/>), in Portuguese;
- LHC open day 2008: guided visits of the ATLAS experiment by members of the public (in English and French);
- Royal Society "Communication Skills" and "Media Training" courses, 2006;
- Led session in Particle Physics Masterclass at Royal Holloway from 2003 to 2006

Background

- Portuguese citizen, born in Lisbon 6th July 1970
- Languages: Portuguese, English, French