

## João Carlos Arnauth Pela

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NW2 3PU London  
United Kingdom

INTERESTS      High Energy Physics, Instrumentation, Detector Design, Simulation

SCIENTIFIC PROFESSIONAL EXPERIENCE      **Imperial College London**, London, United Kingdom

*Ph.D. Student at the CMS Experiment at the LHC*      **Jan 2012 to Dec 2015**

- Member of the VBF Higgs to Invisible analysis group. Responsible for the cross check analysis for the publication with full Run I data using parked data.
- Designed the event selection algorithm (trigger) for both the 2012-13 analysis as well as the 2015 analysis.
- Provided service work as: Trigger Shifter, Trigger Field Manager and Shift Leader.
- Member of the Higgs to  $\gamma\gamma$  analysis group. Worked on fit function systematics determination and Higgs spin analysis.

**CERN - European Organization for Nuclear Research**, Geneva, Switzerland

*CMS L1T Data Monitoring Quality Coordinator*      **Jul 2012 to Jun 2014**

- Coordination of a group of 5 people with the task of maintaining high operational standards the the CMS L1T system.
- Responsible for the real time monitoring of a mission critical system.
- Responsible for the data quality certification for physics usage.

**CERN - European Organization for Nuclear Research**, Geneva, Switzerland

*Engineer/Physicist for the CMS Experiment at the LHC*      **Feb 2011 to Dec 2012**

- Design and implementation of monitoring tools for the Level 1 Trigger in the framework of the Data Quality Monitoring (DQM) system. Resulting work is used for online monitoring and data quality certification.
- A shift as CMS Shift Leader (collisions)      **Aug 2001**
- Several shifts as CMS Online Trigger Shifter (collisions)      **Aug 2011 to Dec 2011**

**Laboratório de Instrumentação e Física Experimental de Partículas**, Lisbon, Portugal

*Junior Researcher for the CMS Experiment at the LHC*      **2007 to 2010**

- Coordinator and developer of the EXOTripleton Exercise for CMS Exotica group as a part of 2009 October Exercise with the objective of testing LHC Data Flow Model      **Oct 2009**
- Several shifts as CMS-ECAL Barrel, Endcaps and Safety Shifter, during the CRAFT 2009 (cosmics) program.      **Aug 2009**
- Design and implementation of method for studying potential for Universal Extra Dimensions with a four lepton final state      **Dec 2008 to present**
- Design and implementation of method for studying  $t\bar{t}$  in semileptonic and fully leptonic with hadronic  $\tau$  channels      **Set 2007 to Dec 2008**

	<p><b>Centro de Fusão Nuclear</b>, Lisboa, Portugal</p> <p><i>Experimental Physist</i> <b>2003 to 2004</b></p> <ul style="list-style-type: none"> <li>Helped to design a test PCB Board to implement the new system of slow control of the ISTOK Tokamak Fusion Reactor based in CAN technology.</li> </ul>
TEACHING EXPERIENCE	<p><b>Imperial College London</b>, London, United Kingdom</p> <p><i>Demonstrator at the Physics 1<sup>st</sup> Year Laboratories</i> <b>Sep 2014 to Jun 2015</b></p> <ul style="list-style-type: none"> <li>Demonstrator in Demonstration Experiments and Electronics.</li> <li>Marking of two cycles of reports.</li> <li>Supervision of two final year projects.</li> </ul>
SUPERVISION EXPERIENCE	<p><b>CERN - European Organization for Nuclear Research</b>, Geneva, Switzerland</p> <p><i>Summer students Project</i> <b>Jun 2011</b></p> <ul style="list-style-type: none"> <li>Design and implementation of monitoring tools for the Level 1 Trigger in the framework of the Data Quality Monitoring (DQM) system.</li> <li>Development of an algorithm to detect dead areas or spikes in the Level 1 Trigger trigger primitives.</li> </ul>
OUTREACH EXPERIENCE	<p><b>CERN - European Organization for Nuclear Research</b>, Geneva, Switzerland</p> <p><i>CERN official guide</i> <b>Jun 2011 to Jun 2014</b></p> <ul style="list-style-type: none"> <li>Certified guide for 6 visits itineraries: ATLAS visiting center, LHCb surface area, CAST experiment, SM18 accelerator complex, LINAC &amp; LEIR and Computing Centre.</li> <li>Guided over 50 visits including VIP guests and press.</li> </ul> <p><b>CERN - European Organization for Nuclear Research</b>, Geneva, Switzerland</p> <p><i>CMS experiment official guide</i> <b>Jun 2011 to Jun 2014</b></p> <ul style="list-style-type: none"> <li>Certified for guiding visit into the CMS experiment radiation controlled underground areas.</li> <li>Guided over 50 visits including VIP guests and press.</li> </ul>
EDUCATION	<p><b>Imperial College London</b>, London, United Kingdom</p> <p>Ph.D., Experimental Particle Physics <b>Dec 2015</b></p> <ul style="list-style-type: none"> <li>Thesis Topic: Search for Higgs Decay to Dark Matter and Trigger Studies</li> <li>Supervisor: <a href="#">Professor David Colling</a></li> <li>Area of Study: Experimental Particle Physics</li> </ul> <p><b>Instituto Superior Técnico</b>, Lisboa, Portugal</p> <p>M.S., Engineering Physics and Technology <b>Oct 2010</b></p> <ul style="list-style-type: none"> <li>With final grade of 90% (Excellent)</li> </ul>

- Thesis Topic: Multi-Lepton Final States in the Search for New Physics at the Large Hadron Collider
- Supervisor: Professor João Varela
- Co-Supervisor: Michele Gallinaro
- Area of Study: Experimental Particle Physics

B.S., Engineering Physics and Technology **Feb 2009**

- With final grade of 70% (Good)
- Engineering specialization (emphasis on Instrumentation)

#### COURSES AND CERTIFICATIONS

*ITC Certificate in First Aid for Sport, Exercise & Fitness* **Nov 2014**

Level 1 Mechanical Workshop Course, **Jun, 2010**

- Basic use and construction techniques with Mechanical Workshop tools and machines

IELTS Academic language test: Overall band 7.0 (good user) **Feb, 2010**

#### AWARDS

**Prize for Excellence in the Support of Teaching & Learning** **May 2015**

- Awarded to individuals who have made a major contribution to the support of learning and teaching within the Faculty of Natural Sciences at Imperial College London.

**Faculty of Natural Sciences Student Award for Best Demonstrator** **May 2015**

- Awarded to the most voted elements of staff in each category. Obtained for my work demonstrating at the Physics 1<sup>st</sup> Year Laboratories.

**Development of Excellence in Sport Grant** **Sep 2012 to Jun 2015**

- Awarded by Imperial College London to high achieving athletes
- Received for 3 consecutive years

**PhD Grant - Fundação para a Ciência e Tecnologia** **Jan 2012**

- Offered by the Fundação para a Ciência e Tecnologia (governmental funding agency)
- Offered a fully paid grant for pursuing a Ph.D. program at Imperial College London.
- Ranked at top 10% applicants.

**Engineer Internship Grant - Agencia de Inovação** **Jan 2011**

- Offered by the Agencia de Inovação (Portuguese governmental agency)
- Awarded a paid engineer internship position at the CMS experiment at CERN.
- Ranked at top 10% applicants.

#### PUBLICATIONS

##### *Thesis*

- Multi-Lepton Final States in the Search for New Physics at the Large Hadron Collider, João Carlos Arnauth Pela, 2010, Instituto Superior Técnico

##### *Public results*

- CMS collaboration, Search for invisible decays of Higgs bosons in the vector boson fusion production mode, 2014, CMS-PAS-HIG-14-038
- CMS collaboration, Search for invisible decays of Higgs bosons in the vector boson fusion and associated ZH production modes, 2013, CMS HIG-13-030, arXiv:1404.1344

*CMS Technical Design Reports*

- CMS collaboration, *CMS Technical Design Report for the Level-1 Trigger Upgrade*, 2013, CERN-LHCC-2013-011 CMS-TDR-12 (Author and Chapter Editor)

*CMS Internal Notes (directly involved)*

- E. Barberis, O. Boeriu, J. Brooke, G. Bruno, J. Chen, J.P. Chou, K. F. Chen, A. De Roeck, S. Eno, M. Gallinaro, S. Harper, C. Hill, G. Landsberg, M. Mozer, J. Pela, S. Rappoccio, A. Rizzi, K. Rossato, P. Rumerio, A. Safonov, C. Shepherd-Themistocleous, E. Twedt, P. Vanlaer “*Data Flow for the CMS Exotica Group for Early Running*” CMS AN - CMS AN-2010/071
- P. Ribeiro, M. Gallinaro, M. Kazana, J. Pela, J. Varela, “*Discovery potential for Universal Extra Dimensions in the four leptons final state in pp collisions at  $\sqrt{s} = 14 \text{ TeV}$* ” CMS AN - 2008/035

CONFERENCE &  
ACADEMIC  
SCHOOLS

- European School of High-Energy Physics 2015 - Participation
- Institute of Physics Joint High Energy Particle Physics and Astro Particle Physics Groups Annual Meeting 2014 - Presentation
- STFC HEP Summer School 2012 - Poster
- PASC Winter School 2008 (Presentation)

ACADEMIC  
SOCIETIES

**Imperial College London**, London, United Kingdom

Imperial College London Judo Club

- Club committee member **2014-15**
- Men team captain **2014-15**

**Instituto Superior Técnico**, Lisboa, Portugal

NFIST (IST Physics Students Association) Member

- Development and implementation of School Registration Web Application for *Physics Week 11* and *Physics Week 12* at IST
- Development and implementation of an integrated system of mailing lists, library and forum
- Responsible for many activities over the years
- Responsible and developer of many activities Web Site (Social Activities and Outreach).

National Physics Students Meeting 2008

- Member of the organization committee
- Development and implementation of all the website’s applications, including Student Registration, Forum, News Portal, etc

OTHER  
PROFESSIONAL  
EXPERIENCE

Web Designer	<b>2004</b>
<ul style="list-style-type: none"> <li>Designed commercial web sites for 2 small companies</li> </ul>	
IT System Administrator	<b>2004</b>
<ul style="list-style-type: none"> <li>At a small local sports club during 2 years</li> </ul>	
Summer Camp Counsellor	<b>2002</b>
<ul style="list-style-type: none"> <li>Organized by Borough of Benfica, Lisbon</li> <li>Looked after +30 children</li> <li>Responsible for the Judo classes</li> </ul>	

CITIZENSHIP

Portuguese (European Union)

LANGUAGE SKILLS

Portuguese: Native or bilingual proficiency  
 English: Native or bilingual proficiency  
 French: Full professional proficiency  
 Spanish: Professional working proficiency

TECHNICAL SKILLS

Extensive hardware and software experience in information technology

Programming: C, C++, Python, JAVA, Fortran 95, Python, Mathematica, Assembler  
 Database: MySQL, SQL  
 Web Oriented: HTML, PHP, CSS, Javascript, XML  
 System Administration: Shell Scripting (Bash, SH Shell), SVN, CVS

Applications: L<sup>A</sup>T<sub>E</sub>X, Microsoft Office, Open Office, and other common productivity packages for Windows and Linux platforms

Operating Systems: Linux (administration knowledge), Microsoft Windows XP/2000/Vista/7

Driver's Licence for motorcycle (all A classes) and cars (B class)

SPORTS  
EXPERIENCE

Judo	
Awards	
<ul style="list-style-type: none"> <li>2<sup>nd</sup> Degree black belt - 2<sup>nd</sup> Dan</li> </ul>	<b>2007</b>
<ul style="list-style-type: none"> <li>Level 2 Coach in Portugal</li> </ul>	<b>2007</b>
<ul style="list-style-type: none"> <li>Level 2 Coach in the United Kingdom</li> </ul>	<b>2015</b>
<ul style="list-style-type: none"> <li>Portuguese Regional Referee level</li> </ul>	<b>2008</b>
Selected Competition Results	
<ul style="list-style-type: none"> <li>5<sup>th</sup> British University Championship (individuals)</li> </ul>	<b>2014-15</b>
<ul style="list-style-type: none"> <li>1<sup>th</sup> London University Open (individuals)</li> </ul>	<b>2013</b>
<ul style="list-style-type: none"> <li>2<sup>nd</sup> Portuguese University Championship (individuals)</li> </ul>	<b>2005-06</b>
<ul style="list-style-type: none"> <li>3<sup>rd</sup> Portuguese University Championship (individuals)</li> </ul>	<b>2004-05</b>

- 3<sup>rd</sup> Portuguese National Kata Championship **2007**

#### Coaching Experience

- Second coach - Imperial College London University Judo Club **2014-2015**
- Invited coach - Judo Club Meyrin, Geneva, Switzerland **2012-2014**
- Second coach - Externato Champagnat, Lisboa, Portugal **2006**
- Main coach - Parque Colombo Gym, Lisboa, Portugal **2005**