

CONTACT
INFORMATION

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EDUCATION

Degree in Electronic Engineering, University of Granada, Spain. 1999.

Degree in Physics, University of Granada, Spain. 2001.

Master Thesis, Complutense University of Madrid, Spain. 2006.

- Dissertation Topic: “Distributed Monte Carlo data production system in the LHC Computing Grid for the CMS experiment”.
- Advisors: Dr. José M. Hernández Calama, Dr. Pablo García Abia.

Ph.D. in Physics, Complutense University of Madrid, Spain, 2007.

- Dissertation Topic: “Grid Computing for the CMS experiment”.
- Advisor: Dr. José M. Hernández Calama.

OTHER ACADEMIC
TRAINING

XXXI International Meeting on Fundamental Physics, University of Oviedo and IFCA. 2003.

Workshop in High Energy Physics, University of Santiago de Compostela, Spain. 2004.

Master in Grid systems administration, deployment and programming, Complutense University of Madrid, Spain. 2006.

CERN School of Computing, University of Helsinki, Finland. 2006.

MAIN RESEARCH
EXPERIENCE

Since 2002 to 2007. Activities during the PhD studies:

Detectors technology: Manufacturing and quality control testing of the drift tubes muon chambers for the CMS experiment. Participation in all steps of a test beam, from the data taking at CERN until the development of the needed software to read the raw data and their further analysis.

Physics Analysis: Participation in the discovery potential and search strategy analysis for the Standard Model (SM) Higgs boson using the $H \rightarrow ZZ^{(*)} \rightarrow 4\mu$ decay channel. Development of several software packages for the computation of likelihood distributions and several statistical estimations (confidence levels, statistical significances...) implementing the log-likelihood ratio method, used as tools to define the search of the SM Higgs boson.

Grid Computing: Significant contribution to allow the implementation of the CMS Computing Model. Use of the Grid technologies to perform the official Monte Carlo data production at large scale for the CMS experiment. Migration of the previous software to the new environment and development of new tools to make a more efficient use of the Grid facilities. Performance and scale tests. Integration of the workload management and data management tools. Development of monitoring tools.

Since 2008. Activities in Open Science Grid:

Workload Management System for ATLAS: Contribution in the development of the Workload Management System for ATLAS (PanDA). In particular, integration with gLExec, a security tool to address the security risks involved in a pilot-based job management operation mode. This integration is an official request from the World LHC Computing Grid (WLCG) management board. Development and maintenance of the pilot jobs for PanDA, and its integration with the framework monitor.

User support in OSG: Porting the PanDA framework to allow other Virtual Organizations in OSG to use it. Development of a dedicated client tool. Assistance during the deployment steps, and end user support during the operation campaigns.

Outreach activities: As the OSG liaison for South America, main responsible for establishing links between OSG and the new National Grid Infrastructures (NGI) in South America. Coordinating the support from OSG experts to help in the development of these new NGIs, and helping both the NGIs and the local task forces to be known in the OSG community. Coordinating and teaching in several OSG training schools:

- Santiago de Chile, January 2009. Users oriented.
- Bogota, November 2009. Users and administrators oriented.
- Bucaramanga, March 2010. Users and administrators oriented.
- Sao Paulo, December 2010. Users oriented.

PUBLICATIONS

C. Albajar et al. “**Test beam analysis of the first CMS drift tube muon chamber**” Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 525, Issue 3, 11 June 2004, Pages 465-484.

P. Arce et al. “**Bunched beam test of the CMS drift tubes local muon trigger**” Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 534, Issue 3, 1 December 2004, Pages 441-485.

J. Caballero et al. “**Some Results on the DT Local Muon Trigger Performance From the 2003 Testbeam**”. CMS IN-2004/035.

“**CMS Computing project: Technical design report**”. CERN-LHCC-2005-023, CMS TDR 7. 20 June 2005.

“**CMS Physics Technical Design Report, Volume I: Detector Performance and Software**” CERN-LHCC-2006-001, CMS TDR 8.1. 2 February 2006.

M.Aldaya, P.Arce, J.Caballero, B. de la Cruz, P.Garcia-Abia, J.M.Hernandez, M.I.Josa, E.Ruiz. “**Search for the Standard Model Higgs boson in the $H \rightarrow ZZ^{(*)} \rightarrow 4\mu$ decay channel using a mass-independent analysis**”. CMS NOTE-2006/106.

The CMS collaboration. “**CMS Computing, Software and Analysis Challenge in 2006 (CSA06) Summary**”. CMS NOTE-2007/006, CERN/LHCC2007-010, LHCC-G-128.

The CMS collaboration. “**CMS Physics Technical Design Report, Volume II: Physics Performance**”. (CERN-LHCC-2006-021, CMS TDR 8.2, 26 June 2006) J. Phys. G: Nucl. Part. Phys. 34 995-1579, 2007.

J.Caballero, P. García-Abia, J.M. Hernández. **“Integration and operational experience in CMS Monte Carlo production in LCG”**. CMS NOTE-2007/016.

J. Alcaraz et al. **“CMS CSA06 Computing, Software and Analysis challenge at the Spanish Tier-1 and Tier-2 sites”**. CMS NOTE-2007/022.

J. Caballero et al. **gLExec and MyProxy integration in the ATLAS/OSG PanDA workload management system**. J.Phys.Conf.Ser.219:072028,2010.

J. Caballero et al. **The PanDA system in the ATLAS experiment**. PoS ACAT08:027,2008.

J. Caballero et al. **Automatic Integration Testbed: validation on the Open Science Grid**. OSG DocDB Document 1019-v1 *presented at CHEP 2010 as a poster*

J. Caballero et al. **Employing Open Science Grid to support National Grid Initiatives in South America and South Africa**. OSG DocDB Document 1022-v1 *presented at CHEP 2010 as a poster*

50+ publications as member of the ATLAS and [formerly] CMS collaborations.

CONFERENCE
PRESENTATIONS

Data Production and Distribution for the CMS Experiment. 30th meeting of the Spanish Royal Society of Physics. 2005. Orense. *I was the speaker of this presentation. Included in the proceedings book of the meeting.*

Search for the Higgs boson in the $H \rightarrow ZZ(*) \rightarrow 4\mu$ decay channel in the CMS Experiment. 30th meeting of the Spanish Royal Society of Physics. 2005. Orense. *Included in the proceedings book of the meeting.*

Results on the performance of CMS Drift Tube Chambers and its local trigger system obtained with a test beam in 2003. 30th meeting of the Spanish Royal Society of Physics. 2005. Orense. *Included in the proceedings book of the meeting.*

CMS Monte Carlo Production in the Open Science and LHC Computing Grid. Computing in High Energy and Nuclear Physics (CHEP). 2006. Mumbai, India. *Included in the proceedings book of the congress.*

CMS Detector Sensitivity to the Standard Model Higgs Boson in $H \rightarrow ZZ \rightarrow 4\mu$ Decay Channel. American Physical Society April Meeting. 2006. Dallas, USA.

CMS Monte Carlo production in the WLCG Computing Grid. Computing in High Energy and Nuclear Physics (CHEP). 2007. Victoria, Canada.

Exercising CMS dataflows and workflows in computing challenges at the Spanish Tier-1 and Tier-2 sites. Computing in High Energy and Nuclear Physics (CHEP). 2007. Victoria, Canada. *Poster.*

CMS Monte Carlo production operations in a distributed computing environment. Hadron Collider Physics Symposium (HCP). 2007. La Biodola, Isola d'Elba, Italy. *Poster.*

Improving Security in the ATLAS PanDA System. Computing in High Energy and Nuclear Physics (CHEP). 2010. Taipei, Taiwan.

PROFESSIONAL
INTERESTS

After eight years of experience working with the two major International Grid Infrastructures, I have identified several scientific domains where research and development can be done and improvements can be applied. Some of these fields are:

- Making interaction with Grid Computing platforms easier for scientists.
- Allowing interactivity in the Grid Computing platforms.
- Porting already existing scientific applications to the Grid and Cloud platforms.
- E-learning and scientific visualization.
- Algorithmic studies.
- Energy saving.

There are several scientific domains that could improve performance and efficiency by using Grid and Cloud Computing. Some of these are biology, geology, human sciences, forecast, energy, medicine, education, etc. My professional interest for the near future focuses on bringing the modern techniques in distributed computing to these scientific domains.

PERSONAL
ATTRIBUTES

- Ability to work in a team, or independently if necessary.
- Ability to plan and work to deadlines.
- Willingness to acquire new skills.
- High degree of self-motivation, determination and flexibility.