

# Esteban Fullana Torregrosa

Researcher Physicist @ IFIC (UVEG-CSIC)

Catedrático José Beltrán, 2.

E-46980 Paterna

Valencia - SPAIN

T +34 963 543 854

Esteban.Fullana@ific.uv.es

## RESEARCHERS ID:

**ScopusID** : 36491631500 | **ORCID** : 0000-0003-3082-621X | **ResearcherID** : A-7305-2016

## ACADEMIC RECORD

High School :

“IB Lluís Vives” Valencia : BUP and COU (1994)

University :

Facultat de Física, Universitat de Valencia : Licenciado en Física (1999)

One year abroad as Erasmus Student : University of Leeds : BCs in Physics (1998)

Postgraduate :

Facultat de Física, Universitat de Valencia : Diploma de Estudios Avanzados (2003)

Facultat de Física, Universitat de Valencia : Doctorado Europeo (2007) (Cum Laude)

## POSTDOC EXPERIENCE ABROAD

7 years of postdoc experience abroad in USA, CERN and Germany:

1. **Argonne National Laboratory, Chicago, Illinois (USA)** : From 2007 to 2010

During this postdoc I was coordinator of the jet calibration task-force. The main delivery of the task-force was the first jet calibration in the ATLAS experiment, and it was published in Eur. Phys. J. C, 73 3 (2013) 2304 that got 253 citations.

2. **CERN (Switzerland)** : From 2010 to 2012

During this postdoc I did the inclusive-jet cross section measurement at 7TeV in the ATLAS collaboration that was published as JHEP 02 (2015) 153 and has 48 citations. This measurement is still being used as an input to determine the structure of the proton.

3. **University of Mainz (Germany)** : From 2013 to 2015

During this postdoc I was the leader of the jFEX project. The jFEX is a data acquisition electronics board in charge of reconstructing jets for the first level trigger. I wrote the preliminary design report. The report got the green light by the CERN data acquisition experts toward the construction of the first prototype.

Proof of these postdocs is attached at the end of this CV.

## **PARTICIPATION IN NATIONAL AND INTERNATIONAL PROJECTS AND COOPERATION AGREEMENTS**

Participation in 8 national projects, three international projects including my own Marie-Curie fellowship and three cooperation agreements.

### **NATIONALS:**

1. Contribuciones al Calorímetro Hadrónico de ATLAS (TileCal) para el LHC (**MCYT – FPA2000-1579-C02-01**) : from 2002 to 2003. Student.
2. Contribuciones al Calorímetro Hadrónico de ATLAS (TileCal) para el LHC (**MEC–CICYT FPA2003-09220-C02-01**) : from 2003 to 2006. Student.
3. Contribuciones al Calorímetro Hadrónico de ATLAS (TileCal) para el LHC (**MEC-FPA2006-12672-C02-01**) : from 2006 to 2007. Student.
4. Hacia un genuino TIER-2 federado español de ATLAS para afrontar el reto de la gestión y procesado del Big Data del LHC (**FPA2016-75141-C2-2-R**) : from 2016 to 2019
5. ATLAS, aceleradores, detectores (**FPA2015-65652-C4-3-R**): from 2016 to 2019. Team member.
6. **AIDA2020** : from 2016 to 2019. Team member.
7. Hacia un genuino TIER-2 (CENTRO IFIC) federado español de ATLAS para afrontar el reto de la gestión y procesado del big data del LHC (Fase II) (**PID2019-104301RB-C21**) : from 2019 to 2020. Team member.
8. Física en el LHC/ATLAS y en colisionadores  $e^+e^-$  (**PGC2018-094856-B-I00**): from 2019 to 2020. Team member.

### **INTERNATIONALS:**

1. ATLAS Project, funded by the **Department of Energy, USA government**. From 2010 to 2013 : Team member.
2. Inclusive Jet Cross Section measurement, funded by the 7th framework program of the EU- **Marie-Curie actions (FP7-PEOPLE-2009-IIF)**. Principal Investigator
3. An ATLAS L1 trigger board for jets, taus and missing ET : jFEX. Funded by **Rheinland-Pfalz government in Germany**. Team member.

### **INTERNATIONAL COOPERATION AGREEMENTS:**

1. Cooperation agreement between IFIC-Valencia and **DESY-Hamburg** (Germany).
2. Cooperation agreement between IFIC-Valencia and **KEK-Tsukuba** (Japan).
3. Cooperation agreement between IFIC-Valencia and **Tohoku University**, Sendai (Japan).

## EXPERIENCE SUPERVISING STUDENTS

During the last 8 years I have been leading the jet analysis group in the ATLAS collaboration. As part of the duties of this group I supervised the following students in their analysis:

-**Eugen Ertel** (Mainz), **Gagik Vardanyan** (Yerevan), **Vojtech Pleskot** (Prague): I supervised these students in their PhD thesis in the analysis of the jet inclusive cross section at 7TeV in the ATLAS experiment. This measurement is the reference for all the inclusive jet cross section measurements in the ATLAS experiment.

-**Hilal Kucuk** (London): I supervised this student in her PhD thesis on the 8 TeV jet inclusive cross section analysis. This student focused in jets with low transverse momentum.

-**Tigran Mkrtchyan** (Heidelberg), **Jonathan Bossio** (Buenos Aires), **Gino Marceca** (Buenos Aires): I supervised these students in their PhD thesis towards the measurement of the 13TeV inclusive jet cross section. In this measurement, for the first time ever, we use the N2LO theoretical calculation, a third order in perturbation theoretical prediction that helped us to understand a discrepancy between our measurement and the data.

In addition, I supervised the TFM (Trabajo Fin de Master) of **Ricardo Gonzalez Lopez** (Valencia) and I am currently co-supervising the PhD thesis of **Luis Montoliu** (Valencia) and **Alberto Prades** (Valencia) on the top mass measurement while working from CERN.

## TALKS ON CONFERENCES AND WORKSHOPS

14 talks, 7 in major international conferences and 7 in international workshops.

### CONFERENCES :

#### **1 Computing for High Energy Physics (CHEP)**

*Sofia, Bulgaria, July 9th 2018. Title : Grid production with the ATLAS Event Service*

#### **2 Rencontres du Vietnam 2014: Physics at LHC and beyond**

*Quy-Nhon, Vietnam, August 12th 2014. Title : The strong coupling constant and PDFs*

#### **3 Standard Model @ LHC 2012**

*Copenhagen, Denmark, April 10th 2012. Title : Inclusive and dijet measurements in ATLAS and their relevance for Pdf's*

#### **4 Hard Probes 2010**

*Elliat, Israel, October 10th 2010. Title : Jet production cross-section and jet properties in pp at  $\sqrt{s} = 7$  TeV with the ATLAS detector*

#### **5 2008 American Physical Society Meeting**

*St. Louis, MI, USA, April 12th 2008. Title : Large extra dimensions in the ATLAS detector*

#### **6 IEEE-NPSS Real Time 2005 conference**

*Stockholm, Sweden, July 15th 2005. Title : Digital signal reconstruction in the ATLAS Hadronic Tile Calorimeter*

#### **7 International Conference on Calorimetry in Particle Physics**

*Perugia, Italy, March 31st 2004. Title : Energy reconstruction algorithms and their influence on the ATLAS Tile Calorimeter*

## WORKSHOPS :

### **1 CLIC Workshop**

CERN, SWITZERLAND, January 2019. Title : Top mass using ISR photons

### **2 International Workshop on Future Linear Colliders**

Arlington, USA, October 2018. Title : 380 GeV CLIC luminosity spectrum determination and impact on the top mass measurement through radiative events

### **3 CLIC Workshop**

CERN, SWITZERLAND, January 2018. Title : Luminosity Measurement study using Bhabha events and top mass measurement from radiative events

### **4 Workshop on top physics at the LC**

CERN, SWITZERLAND, June 2017. Title : CLIC luminosity spectrum reconstruction

### **5 ATLAS Standard Model Workshop**

Annecy, FRANCE, February 2015. Title : Inclusive, di- and three-jet production and heavy-flavour jet production

### **6 Hadronic Calibration workshop**

San Francisco, USA, September 2011. Title : Dijet Calibration

### **7 IEEE workshop on Statistic Signal Processing**

Bordeaux, France, June 2005. Title : Signal reconstruction in a high rate environment for scintillator calorimeters

## OUTREACH/ DISSEMINATION ACTIVITIES

**1 Charla : El día a día de un físico del CERN, conexión en directo** : “II Jornada de la Ciencia, Muro de Alcoi” : 03/05/2019

**2 Artículo : El CERN: más que un laboratorio de partículas elementales** : “Revista Española de Física” : Vol 32, No 3 (2018).

**3 Charla : El experimento ATLAS** “I Jornada de la Ciencia, Muro de Alcoi” : 06/04/2018

**4 Libro : At the Leading Edge (ISBN-10: 9814304670)**. Edited by Dan Green I am the editor of Chapter 9 : The hadronic section of the central ATLAS calorimeter. 2010.

**5 Guia : Exposición Itinerante del CERN** (Museo Ciencias Naturales, Valencia) : Guide of the exhibition during 6 months in 2000.

## FIVE MOST RELEVANT PUBLICATIONS

### **1.- Top quark mass measurement in radiative events at electron-positron colliders.**

Physics Letters B Volume 804, 10 May 2020, 135353. Authors: *M. Boronat, E. Fullana, J. Fuster, P. Gomis, A.H. Hoang, A. Widl, V. Mateu, M. Vos*. **9 citations**.

My role : Editor of the note, supervisor of the analysis and provider of the luminosity spectrum.

**2.- Measurement of inclusive jet and dijet cross-sections in proton-proton collisions at  $\sqrt{s}=13$  TeV with the ATLAS detector.** Journal of High Energy Physics 2018, Article number: 195 (2018). Authors : The ATLAS Collaboration. **46 citations.**

My role : Coordinator of the analysis team. Provider of the code to apply the corrections, compute the total and combined uncertainties and doing the plots and pioneer of the analysis in ATLAS.

**3.- Jet energy measurement with the ATLAS detector in proton-proton collisions at  $\sqrt{s}=7$  TeV.** The European Physical Journal C volume 73, Article number: 2304 (2013). Authors : The ATLAS Collaboration. **253 citations.**

My role : Coordinator of the working team that delivered this calibration; contributor to one of the in-situ techniques, the dijet balance, and supervisor of one of the analysis to check the response of the detector against non operative parts of the calorimeter.

**4.- Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC.** Physics Letters B. Volume 716, Issue 1, 17 September 2012, Pages 1-29. Authors : The ATLAS Collaboration. **7568 citations.**

My role : Working on the construction of the detector since 2001, coordinator of the jet calibration task force, and main responsible of the data acquisition of the central hadronic calorimeter.

**5.- The ATLAS experiment at the CERN Large Hadron Collider.** Journal of Instrumentation, Volume 3, August 2008. Authors : The ATLAS Collaboration. **2300 citations.**

My role : Ten years work in the construction of the central hadronic calorimeter including the characterisation of the photomultipliers and designing the energy reconstruction algorithms.

In addition I **co-authored 781 publications**, the complete list can be seen in the Web of Science public profile : <https://publons.com/researcher/2318294/esteban-fullana-torregrosa/>

## SCIENTIFIC COORDINATION ACTIVITIES

1. **Jet calibration task force convener** : calibration, in-situ corrections and uncertainty determination. From 2007 to 2012.
2. **Deputy run coordinator** of the central hadronic calorimeter: shifters tutorial and training. From September 2010 to December 2010.
3. **Run Coordinator** of the central hadronic calorimeter: data quality and data acquisition main responsible. From January 2012 to April 2012.
4. **Leader of the jet analysis team**: main responsible of the jets measurements : inclusive jets, center of mass energy of the dijet system, three jet system. From 2012 to 2020.

Firmado: Esteban Fullana Torregrosa