

PERSONAL INFORMATION

Alberto Prades Ibañez

 Avenida Roma, 12 Onda(Castellon)/Spain

 +034 685 64 09 07

 alberto.prades.ibanez@cern.ch alprai@ific.uv.es

 <https://gitlab.cern.ch/alprades>

 www.linkedin.com/in/alberto-prades-ibañez-24803218a/

Date of birth 19 January 1995 | Nationality Spanish

JOB APPLIED FOR **Name of PhD grant**

WORK EXPERIENCE

June 2019 – Present **FPU predoctoral grant**

Instituto de Física Corpuscular (IFIC), Grupo de ATLAS y nuevos colisionadores
Calle catedrático Jose Beltran Martinez, 2 Paterna (Valencia) Spain

Obtained a public predoctoral grant "FPU" supported by the Spanish government.

Project Title: Measuring the top-quark pole mass with the ATLAS detector at 13 TeV.

- Tasks:
- Qualification task in the ATLAS jet/missing-Et group under the supervision of Steven Schramm and Marcel Vos. The task consisted of a JMS/JMR in-situ measurements and an athena Tool development "FFJetSmearingTool".
 - Top quark mass measurement in $t\bar{t} + 1$ -jet topologies under the supervision of Juan Fuster Verdú y Marcel Vos. We aim to obtain a top quark pole mass measurement with an uncertainty of 0.5-1 GeV.
 - Teaching at the University of Valencia. Laboratory of Physics II (Chemistry Bachelor) (24h)

December 2018 – June 2019 **CSIC contract**

Instituto de Física corpuscular (IFIC), Grupo de ATLAS y nuevos colisionadores
Calle catedrático Jose Beltran Martinez, 2 Paterna (Valencia) Spain

Obtained a public mid-time CSIC contract.

Project Title: Precision physics at high energies: the LHC and future colliders .

- Tasks:
- Generation and simulation of MC samples for events with a $t\bar{t}$ -jet topology as they are produced in the LHC collider with a center of mass energy of 13 TeV.
 - Development of new computational algorithms and definition of an optimal strategy to improve the event selection and reduce the background contamination.

April 2018 – July 2018 **Collaboration grant for Master students**

Instituto de Física corpuscular (IFIC), Grupo de ATLAS y nuevos colisionadores
Calle catedrático Jose Beltran Martinez, 2 Paterna (Valencia) Spain

Obtained a public collaboration grant for master students.

Project Title: Exploration on new methods to measure the top quark mass at 13 TeV in LHC.

- Tasks:
- Generation of MC samples, event selection criteria and system reconstruction for $t\bar{t} + 1$ -jet events in dileptonic decays at parton, parton + parton shower, pre-hadronization and particle levels.
 - Sensitivity study of the \mathcal{R} observable at 13 TeV p-p collisions in the dileptonic decay channel. Systematic and theoretical uncertainties estimation .
 - Optimization of the observable definition: extra-jet transverse momentum cut.

July 2017 – September 2017 **DESY Summer Student Program**

German Electron Synchrotron (DESY), ATLAS group
Notkestraße 85, 22607 Hamburg, Germany

Participant in the 2017 DESY Summer Student Program under the supervision of Cecile Deterre and Roger Naranjo.

Project Title: Top quark spin in 2HDM models.

- Tasks: – Use a new set of polarization and spin correlation observables defined in $t\bar{t}$ topologies to perform comparisons between the ATLAS data at 8 TeV and different predictions of the Two Higgs-Doublet Model (2HDM).

October 2016 – June 2017 **Collaboration grant for Undergraduate Students**

Department of atomic, molecular and nuclear physics of University of Valencia
Calle del Dr. Moliner, 50 Burjassot (Valencia) Spain

Obtained the public collaboration grant for undergraduate students in the department of atomic, molecular and nuclear physics at University of Valencia (450h).

Project Title: Top-quark physics in the LHC and future colliders.

- Tasks: – Bibliographic study about the top quark. Theoretical calculation of the running of top-quark mass using the Mathematica package "RunDec". Comparisons with LHC measurements and future colliders expected precision.

July 2016 **IFIC Summer Student Program**

Instituto de Física corpuscular (IFIC), Grupo de ATLAS y nuevos colisionadores
Calle catedrático Jose Beltrán Martínez, 2 Paterna (Valencia) Spain

Participant in the 2016 IFIC Summer Student Program under the supervision of Marcel Vos.

Project Title: Advantages of a linear accelerator. The ILC.

- Tasks: – Bibliographic study comparing the main differences between a linear accelerator (ILC) and a circular accelerator (LHC). Study of the vibrational resonances of a silicon sheet using Matlab.

June 2016 – July 2016 **Summer Undergraduate Research Fellowship SURF@IFISC**

Institute for Cross-Disciplinary Physics and Complex Systems (IFISC),
Carretera de Valldemossa, Palma (Balearic Islands) Spain

Participant in the 2016 IFISC Summer Student Program under the supervision of Victor M. Eguíluz (300h).

Project Title: Strategies for probing complex networks: topology in networks with dynamical noisy bridges

- Tasks: – Testing and programming new strategies to know a graph structure without having the full information of the system.

EDUCATION AND TRAINING

2018– Present **PhD - Thesis Title: "Measuring the top-quark pole mass with the ATLAS detector at 13 TeV"** ISCED 8

Instituto de Física Corpuscular, University of Valencia, Spain

- PhD courses: – *Innovation on the field of particle physics* (6h)
– *Computer tools in particle physics* (6h)

2017–2018 **Master's degree in Advanced Physics, speciality in nuclear and particle physics, 9.19**

Faculty of Physics, University of Valencia, Spain

2013-2017 **Bachelor in Physics, 8.78**

Faculty of Physics, University of Valencia, Spain

PERSONAL SKILLS

Mother tongue Spanish and catalan

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	B2	B2	B2
	Cambridge English Level 1 Certificate in ESOL International (First) B2				
Catalan	C1	C1	C1	C1	C1
	Junta Qualificadora de Coneixements de Valencià Nivell C1				

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
[Common European Framework of Reference for Languages](#)

SCIENTIFIC COMMUNICATION

2019 - Present International Masterclasses at IFIC. ATLAS Masterclasses for high school students, Valencia.

TEACHING

2020 - 2021 Physics II, Chemistry Bachelor of the University of Valencia.
 – Lab professor for grup CL4 and problems professor for groups CU2 and DU2. Total hours, 26 h. Subject code 34190.

2019 - 2020 Physics II, Chemistry Bachelor of the University of Valencia.
 – Lab professor for grups CL1 and CL4. Total hours, 24 h. Subject code 34190.

PUBLICATIONS

As an official member of the ATLAS collaboration (since 25/03/2020) I sign any of the papers that the collaboration produce. Here below you will find a list of the current published articles where I appeared as an author. Only the articles published in recognized journals are mentioned.

- 2021 ATLAS Collaboration, "Search for phenomena beyond the Standard Model in events with large b -jet multiplicity using the ATLAS detector at the LHC", Eur.Phys.J.C 81 (2021) 1, 11 (<https://doi.org/10.1140/epjc/s10052-020-08730-0>)
- 2020 ATLAS Collaboration, "Observation and Measurement of Forward Proton Scattering in Association with Lepton Pairs Produced via the Photon Fusion Mechanism at ATLAS", Phys.Rev.Lett. 125 (2020) 26, 261801 (<https://doi.org/10.1103/PhysRevLett.125.261801>)
- ATLAS Collaboration, "Medium-induced modification of Z -tagged charged particle yields in $Pb+Pb$ collisions at 5.02 TeV with the ATLAS detector", Phys.Rev.Lett. 126 (2021), 072301 (<https://doi.org/10.1103/PhysRevLett.126.072301>)
- ATLAS Collaboration, "Search for heavy resonances decaying into a photon and a hadronically decaying Higgs boson in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector", Phys.Rev.Lett. 125 (2020), 251802 (<https://doi.org/10.1103/PhysRevLett.125.251802>)
- ATLAS Collaboration, "Evidence for $t\bar{t}\bar{t}$ production in the multilepton final state in p - p collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector", Eur.Phys.J.C 80 (2020) 11, 1085 (<https://doi.org/10.1140/epjc/s10052-020-08509-3>)
- ATLAS Collaboration, "Operation of the ATLAS trigger system in Run 2", JINST 15 (2020) 10, P10004 (<https://doi.org/10.1088/1748-0221/15/10/P10004>)
- ATLAS Collaboration, "Search for resonances decaying into a weak vector boson and a Higgs boson in the fully hadronic final state produced in proton–proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector", Phys.Rev.D 102 (2020), 112008 (<https://doi.org/10.1103/PhysRevD.102.112008>)
- ATLAS Collaboration, "A search for the dimuon decay of the Standard Model Higgs boson with the ATLAS detector", Phys.Lett.B 812 (2021), 135980 (<https://doi.org/10.1016/j.physletb.2020.135980>)
- ATLAS Collaboration, "Alignment of the ATLAS Inner Detector in Run-2", Eur.Phys.J.C 80 (2020) 12, 1194 (<https://doi.org/10.1140/epjc/s10052-020-08700-6>)

ATLAS Collaboration, "Measurements of inclusive and differential cross-sections of combined $t\bar{t}\gamma$ and $tW\gamma$ production in the $e\mu$ channel at 13 TeV with the ATLAS detector", JHEP 09 (2020), 049 ([https://doi.org/10.1007/JHEP09\(2020\)049](https://doi.org/10.1007/JHEP09(2020)049))

ATLAS Collaboration, "Measurement of the $t\bar{t}$ production cross-section in the lepton+jets channel at $\sqrt{s} = 13$ TeV with the ATLAS experiment", Phys.Lett.B 810 (2020), 135797 (<https://doi.org/10.1016/j.physletb.2020.135797>)

ATLAS Collaboration, "Search for pairs of scalar leptoquarks decaying into quarks and electrons or muons in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector", JHEP 10 (2020), 112 ([https://doi.org/10.1007/JHEP10\(2020\)112](https://doi.org/10.1007/JHEP10(2020)112))

ATTENDED SCHOOLS, WORKSHOPS AND CONFERENCES

-
- October 2019 ATLAS Induction Day and Software Tutorial, Geneva (Switzerland)
 - September 2019 TAE 2019 - COST International Training School on High Energy Physics, Benasque (Spain)
 - Oral contribution: *Large-R jet reconstruction, trimming and calibration in the ATLAS detector.*
 - July 2019 XXVII Biennial Meeting of the Spanish Royal Society of Physics (RSEF), Zaragoza (Spain)
 - Oral contribution: *Prospects of a top quark mass measurement at 13 TeV with the ATLAS detector.*
 - April 2018 XLVI International Meeting on Fundamental Physics, Salamanca (Spain)