

<b>Date of the CVA</b>	14/03/2020
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## Section A. PERSONAL DATA

Name and Surname	Bruno Zamorano García		
DNI		Age	
Researcher's identification number	Researcher ID		
	Scopus Author ID	36571039600	
	ORCID	0000-0002-4286-2835	

### A.1. Current professional situation

Institution	Universidad de Granada		
Dpt. / Centre	Física Teórica y del Cosmos / Facultad de Ciencias		
Address			
Phone	Email	<a href="mailto:bzamorano@ugr.es">bzamorano@ugr.es</a>	
Professional category	Postdoc, Juan de la Cierva Fellowship	Start date	2018
UNESCO spec. code	229000 - Physical High-Energy		
Keywords	Physics - High energies - Experiment		

### A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
PhD in Physics	Universidad de Granada	2014
MSc in advanced methods and techniques in Physics	Universidad de Granada	2009
BSc in Physics	Universidad de Granada	2008

### A.3. General quality indicators of scientific production

-- Leadership roles --

- International Board representative for the Granada group application to join DUNE and SBND: 2019

- Calibration and alignment convener for the NOvA collaboration: 2017 - 2018

- Production and computing convener for the NOvA collaboration: 2016 - 2017

-- Student supervision --

- BSc project: "Transporte de la savia: problema abierto", Lucía Ruiz Márquez. University of Granada, 2019

- MSc project: "Optimisation of muon neutrino disappearance analysis carried out by NOvA", Carl Atkins. University of Sussex, 2017

-- Summary of publications --

(taken from <http://inspirehep.net/author/profile/Bruno.Zamorano.Garcia.1>)

- Number of papers: 68 - Number of citations: 7096

- Average citations per paper: 104

- h-index: 43

- Famous papers (over 250 citations): 8

- Very well-known papers (100 - 249 citations): 18

- Known papers (10 - 99 citations): 32

- Latest publication: Phys.Rev.Lett. 123 (2019) no.15, 151803 (36 citations)

- Corresponding author of the paper on muon neutrino disappearance in NOvA: Phys.Rev.Lett. 118 (2017) no.15, 151802 (140 citations)
- Member of the review committee of the paper on electron neutrino appearance in NOvA: Phys.Rev.Lett. 118 (2017) no.23, 231801 (161 citations)

## Section B. SUMMARY OF THE CURRICULUM

-- Knowledge and intellectual abilities --

I'm a well-trained physicist with strong data analysis and software skills, who enjoys analysing and understanding high volumes of data. During my degree I received formal education in Physics, with emphasis on Mathematics and Statistics. I then became proficient with Monte Carlo techniques, Statistical analysis and programming during my PhD and postdoctoral experience. I'm an experienced public speaker and communicator, confident in delivering complex arguments to a variety of audiences.

Some of the tools I created for NOvA involve the interaction of many different gears, from scripting or C++ based computing, to HTML website development. Evidence of my breadth of understanding on the physics of neutrino oscillations is having been invited to various international conferences to give review talks on the field, including EPS 2017.

-- Personal effectiveness and productivity --

During the 3 years I was a member of the NOvA collaboration I made 200 presentations, 57 of them involving work on collaboration with others, and written 7 internal notes for 5 different tasks within the experiment (namely: trigger, data quality, production and the two main analyses: muon neutrino disappearance and electron neutrino appearance). This averages to over 1 presentation per week.

The relevance of my work was acknowledged by the collaboration, giving me a leading role in the muon-neutrino disappearance analysis, as well as a position as production and computing task leader and, subsequently, calibration task leader. There are only 20 of these leadership positions in a collaboration of nearly 200 people.

-- Research governance and organisation --

As a member of various international collaborations, I'm used to working in group as well as to presenting my results in public. I am also aware of the communal needs this kind of experiments require, including maintaining and operating the detector when needed. Being the production convener for NOvA involved leading a team of nine people who were responsible for processing the data and simulations for the entire collaboration in a timely manner. During my last campaign as team leader, my team processed over four million files and produced 1.5 PB of data with a very tight deadline to be ready for Neutrino 2016.

In addition, I have worked in the private sector as a data scientist, which has provided me with unique insight on project management, progress tracking and leadership, as well as a broader view on how knowledge in Physics can be transferred to the other fields. I believe that during my postdoctoral position I gained enough experience to step forward into higher responsibilities inside an international collaboration, and to lead my own research group.

-- Engagement, influence and impact --

My communicative skills have been acknowledged by those who have hosted me for seminars (I visited 8 particle physics groups from the UK to talk about the NOvA analyses between November 2015 and October 2016) and outreach activities (particularly the International Masterclass on Particle Physics at Parque de las Ciencias).

In addition, I have 4 years of teaching experience in Spain, during which I got a scoring of 4.7 out of a maximum of 5, based on an anonymous survey to the students (over a point higher than the average for the degree) as well as a term in the UK. I have successfully supervised a MSc project in the UK and a BSc project in Spain to their completion.

## Section C. MOST RELEVANT MERITS (ordered by typology)

### C.1. Publications

- 1 **Scientific paper.** Acero, M. A.; others. 2019. First Measurement of Neutrino Oscillation Parameters using Neutrinos and Antineutrinos by NOvA Phys. Rev. Lett.APS. 123-15, pp.151803-151803.
- 2 **Scientific paper.** Adamson, P.; others. 2018. New constraints on oscillation parameters from nue appearance and numu disappearance in the NOvA experiment Phys. Rev. D. 98, pp.032012.
- 3 **Scientific paper.** Adamson P.; others. 2017. Constraints on Oscillation Parameters from nue Appearance and numu Disappearance in NOvA Phys. Rev. Lett.APS. 118-23, pp.231801.
- 4 **Scientific paper.** Adamson P.; others. 2017. Measurement of the neutrino mixing angle theta23 in NOvA Phys. Rev. Lett.APS. 118-15, pp.151802.
- 5 **Scientific paper.** Adamson, P.; others. 2017. Search for active-sterile neutrino mixing using neutral-current interactions in NOvA Phys. Rev. D. APS. 96-7, pp.072006.
- 6 **Scientific paper.** Adamson, P.; others. 2016. First measurement of electron neutrino appearance in NOvA Phys. Rev. Lett.116-15, pp.151806-151806.
- 7 **Scientific paper.** Adamson, P.; others. 2016. First measurement of muon-neutrino disappearance in NOvA Phys. Rev.D93-5, pp.051104-051104.
- 8 **Scientific paper.** Abreu, Pedro; others. 2013. Ultrahigh Energy Neutrinos at the Pierre Auger Observatory Adv.High Energy Phys.2013, pp.708680-708680.
- 9 **Scientific paper.** Abreu, P.; others. 2012. Search for point-like sources of ultra-high energy neutrinos at the Pierre Auger Observatory and improved limit on the diffuse flux of tau neutrinos Astrophys.J.755, pp.L4-L4.
- 10 **Scientific paper.** Abreu, P.; others. 2011. A Search for Ultra-High Energy Neutrinos in Highly Inclined Events at the Pierre Auger Observatory Phys.Rev.D84, pp.122005-122005.

### C.2. Participation in R&D and Innovation projects

- 1 Estudio de las propiedades de los rayos cósmicos y de los neutrinos en la UGR Ministerio de Economía y Hacienda. Antonio Buenp Villar. (Universidad de Granada). 01/01/2018-30/09/2020. 80.000 €.
- 2 Probing Fundamental Physics with Antineutrinos at the NOvA Experiment European Research Council. Jeffrey Hartnell. (University of Sussex). 01/10/2012-30/09/2018. 1.418.848 €.
- 3 Participación de la UGR en el Observatorio Pierre Auger FPA2012-39489-C04-04. Antonio Bueno Villar. (Universidad de Granada). 01/01/2013-31/12/2015. 261.261 €.
- 4 Física experimental de rayos cósmicos (El Observatorio Pierre Auger) e I+D para Física subterránea en Canfranc FPA2009-07187. Antonio Bueno Villar. (Universidad de Granada). 01/01/2010-31/03/2013. 600.765 €.
- 5 Participación en experimentos de física de astropartículas: Estudio de rayos cósmicos y búsqueda de materia oscura FPA2006-00684. Antonio Bueno Villar. (Universidad de Granada). 01/10/2006-31/01/2010. 640.612,8 €.

### C.3. Participation in R&D and Innovation contracts

### C.4. Patents