

# Fernando Buitrago

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*http://fbuitrago.github.io*

# Curriculum Vitae

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## **Personal information:**

*Full name:* Fernando Buitrago Alonso

*Date of birth:* 18-Jun-1983

*Nationality:* Spanish (National ID number: 07990312C)

*ORCID ID:* 0000-0002-2861-9812

*Scopus ID:* 36195346900

*Web of Science ResearcherID:* K-9464-2019

*1<sup>st</sup> Affiliation:* Dept. of Theoretical and Atomic Physics, and Optics; Faculty of Science, Office B215; Paseo de Belén, 7; University of Valladolid, 47011, Valladolid, Spain

*2<sup>nd</sup> Affiliation:* Institute for Astrophysics and Space Sciences, Observatório Astronómico de Lisboa, Tapada de Ajuda, Edifício Leste, 2nd floor, PT1349-108, Lisbon, Portugal

## **Education:**

- Since Oct 2020: **Distinguished senior researcher + lecturer tenure-track position**  
*Working in the University of Valladolid (Spain), although also keeping the previous Portuguese affiliation*

- Sep 2015 – Sep 2020: **FCT Fellowship SFRH/BPD/103958/2014 + Invited Lecturer** (Professor Auxiliar Convocado)

*Working at the Institute for Astrophysics and Space Sciences IIA and the University of Lisbon (Portugal)*

- Oct 2011 – Mar 2015: **PostDoctoral Researcher Associated James S. Dunlop's European Research Council Advance Grant + 6-month extension funded by the ASTRODEEP FP7 European Union programme**

*Working in the Institute for Astronomy, Royal Observatory of Edinburgh, University of Edinburgh (UK)*

- Apr 2008 – July 2012: **PhD Thesis: Structural evolution of massive galaxies in the last 11 Gyr**

*University of Nottingham (UK)*

*Supervisors: Dr. Ignacio Trujillo (IAC, Spain), Prof. Christopher J. Conselice and Prof. Alfonso Aragón-Salamanca (Nottingham, UK)*

- Since Oct 2010: **BSc in Computer Science** (3-yr degree), University of Salamanca (Spain)

- Since Jun 2008: **MSc in Astronomy** (2-yr degree), University of La Laguna (Spain)

- Since Jun 2006: **MSc in Physics** (5-yr degree), University of Salamanca (Spain)

## **Awards:**

- **Prize for the Best Spanish Thesis in Astronomy 2013** (ex-aequo) by the Spanish Astronomical Society (SEA)

- Science & Technology Facilities Council (UK) and Institute of Astrophysics of Canary Islands (Spain) **International Grant to study my PhD in the UK** (2008-2011)

## **Professional Experience:**

**As of 15-Jul-2024, I have 4291 cites (according to NASA ADS; h-index 34) with two first-author publications with 387 and 155 cites respectively (59 Q1 articles in total). I have given 11 invited talks, 31 talks in international meetings and 26 in research institutions.**

Metrics from SCOPUS (ref. 36195346900): Citations: 3487 / h-index: 30 / 68 publications

Metrics from WoS (ref. K-9464-2019): Citations: 3325 / h-index: 29 / 59 publications / 17 peer reviews

Metrics from Google Scholar: Citations: 5308 / h-index: 34

## Short summary

I studied both Physics and **Computer Science at the University of Salamanca, and a MSc in Astronomy at the University of La Laguna**. I did both my thesis and my first postdoc in the United Kingdom (7 years in total). **My thesis** entitled "Structural evolution of massive galaxies in the last 11 Gyr" carried out in the **University of Nottingham (UK) was awarded with the SEA prize (ex-aequo) to the best Spanish thesis in 2013**. This thesis was granted by an international STFC-IAC agreement, thus having 2 supervisors in the U.K. (Prof. Christopher J. Conselice and Prof. Alfonso Aragón-Salamanca) and another in Spain (Prof. Ignacio Trujillo).

I moved to the **University of Edinburgh (UK) with a PostDoctoral Research Associate linked to Prof. James S. Dunlop Advanced ERC grant**. There I joined the ASTRODEEP FP7 European Union programme (<http://www.astrodeep.eu/>) as leader in the galaxy parametric fitting Working Group (WG). In fact, the ASTRODEEP collaboration paid for the last 6 months of my postdoc. I was LOC for three Durham-Edinburgh eXtragalactic meetings and I was the coordinator of a NAM 2013 parallel session.

In May-June 2015, I was an **Invited Lecturer in the Mbarara University for Science and Technology (Uganda) and the Addis Abeba University/Entoto Observatory (Ethiopia)** helping the East African Astronomical Society to develop a MSc and a PhD programme in Astronomy.

Later I obtained a **6-year Foundation for Science & Technology fellowship at the Institute of Astrophysics and Space Sciences and a contract as Invited Lecturer at the University of Lisbon (Portugal)**. I have supervised 1 PhD (Sandra N. dos Reis; co-supervised with P. Papaderos e I. Matute) and 1 MSc student. Additionally: I was an ESO Observing Programmes Committee member 3 times (P99, P100, P101), I have participated as a panel member for 2 PhD theses (1 in Spain, 1 in Portugal), I was awarded as PI a Portugal-Germany (FCT-DAAD) international cooperation programme (22.8k€ for 2018-2019). I belonged to the Spanish Astronomical Society (SEA) Scientific Committee for the period 2017-2020, being the LOC coordinator in its 2018 meeting.

I am a **Distinguished Senior Researcher position at the University of Valladolid since October 2020**. This is a newly created 5-year position giving me the possibility of turning into a reader (profesor titular) after obtaining its accreditation, 15kEUR and a 1 PhD student. I have been recognized with two Sexenios (2008-2013 and 2014-2019) and the I3 certificate. I was Commissioner (semester 2021B) and Vice-Commissioner (semesters 2020A, 2020B, 2021A) for the GALaxies and COSmology panel of Canary Islands night CAT. I also evaluated national projects for the Chilean FONDECYT national agency. I was a PhD jury member in 4 theses in Spain. I regularly referee for Q1 journals (Nature, ApJ, A&A, MNRAS). I supervised 5 TFGs and 2 TFMs in Computer Science, and 4 TFGs and 1 TFM in Physics. I supervise two PhD students: Samane Raji (co-supervised with I. Trujillo) and J. Fernández Iglesias (co-supervised with B. Sahelices). During 2021 I was also granted **PI with the Spanish Ministry Project ref. PID2020-116188GA-I00 “Galactic Edges and Euclid in the Low Surface Brightness Era (GEELSBE)”** (budget: 98.978€) –Convocatoria 2020 Proyectos de I+D+i - PGC Tipo A, Ministerio de Ciencia e Innovación, start: 1/1/2021, end: 31/12/2024–. I was a panel member for 2024 Ramón y Cajal grant programme.

I am involved many international collaborations (past: CANDELS, UltraVISTA, VANDELS, SHARDS; present: **Euclid –I lead the Diffuse Light Working Package in the Local Universe Working Group** since February 2021 managing an international group of 40 researchers–, JWST-CEERS, MOONS, 4HS, Athena, ARRAKIHS, WHS).  
My stays:

- IAC (5th to 19th Feb 2013, 2nd Nov to 2nd Dec 2018, 8th to 19th Jul 2019)
- Observatory of Rome (26th Apr 18th May 2014)
- 2 weeks observing at the VLT (15-20th Nov 2015 and 20-27th Nov 2016)
- University of Sao Paulo (12th Oct to 12th Nov 2017)
- ESO Garching (23rd Jul to 2nd Aug 2018)

I am **very active in science communication**, giving talks, going to schools, writing for many journals, creating press releases (you can find some contributions in <https://fbuitrago.github.io/>). I am the **deputy coordinator of the SEA commission “Astronomy and Culture”** since June 2023.

## Invited talks

- 10<sup>th</sup> June 2024 – **Fronteiras, dende a orixe do universo ata a exploración espacial meeting organized by Real Academia Galega de Ciencias – Surveys de galaxias: rastrexando a distribución da materia en diferentes épocas cósmicas** – Santiago de Compostela (Spain)
- 6<sup>th</sup> July 2023 – **Universidad de Verano de Teruel, IX Curso de Astrofísica: Astrofísica desde el espacio (pasado, presente y futuro) – Cosmología desde el espacio: Euclid y el estudio de la estructura del Universo** – Teruel (Spain)

- 8<sup>th</sup> Apr 2023 – **University of Stockholm Invited Seminar** – “**The faintest surface brightness limits of high redshift galaxies**” – Stockholm (Sweden)
- 15<sup>th</sup> July 2020 – **XIV<sup>th</sup> Spanish Astronomical Meeting** – **Round table on professional prospects** – Virtual conference
- 13<sup>th</sup> July 2020 – **XIV<sup>th</sup> Spanish Astronomical Meeting** – **Summary of all Extragalactic Astronomy contributions** – Virtual conference
- 30<sup>th</sup> June 2020 – **European Astronomical Society 2020 meeting**, Session 17 Compact passive and massive galaxies across the Universe – “**High redshift massive galaxies, and their surprising size evolution**” – Leiden (Netherlands)
- 26<sup>th</sup> Apr 2019 – **Charlas de Física Workshop (outreach)** – “**A Universe made of galaxies**” – Valladolid (Spain)
- 25<sup>th</sup> Apr 2019 – **Charlas de Física Workshop (research)** – “**The most massive galaxies of the Universe**” – Valladolid (Spain)
- 20<sup>th</sup> Jun 2017 – **SISSA Invited seminar** – “**Pressing and pending questions about massive galaxies**” – Trieste (Italy)
- 8<sup>th</sup> Jul 2014 – **XII<sup>th</sup> Spanish Astronomical Society Meeting plenary talk** – “**Structural evolution of massive galaxies in the last 11 Gyr**” – Teruel (Spain)
- 4<sup>th</sup> Oct 2013 – **IVICFA Workshop** – “**The most massive galaxies living in a  $\Lambda$ CDM Universe**” – Valencia (Spain)

## Conference talks

- 16<sup>th</sup> Jul 2024 – Spanish Astronomical Society meeting 2024 – “Astronomy & Culture” symposium – “Una (necesaria) antología poético-astronómica” – Granada (Spain)
- 1<sup>st</sup> Jul 2024 – European Astronomical Society meeting 2024 – Session S7a: A multiwavelength view on low surface brightness and dwarf galaxies – “The quest to find galaxy limits with HST, Euclid and beyond” – Padova (Italy)
- 13<sup>th</sup> Jul 2022 – VEGAS meeting – “Finding the limits of galaxies up to  $z = 1$ ” – Naples (Italy)
- 30<sup>th</sup> Jun 2022 – European Astronomical Society meeting 2022 – Session S11c : Machine Learning: a giant leap towards space discovery in the era of peta and exabyte scale surveys – “Machine Learning revealing the limits of galaxies up to  $z = 1$ ” – Valencia (Spain)
- 28<sup>th</sup> Jun 2022 – European Astronomical Society meeting 2022 – Session S4f : Satellite galaxies and tidal streams in the framework of cosmological models – “Euclid, a revolution in the low surface brightness realm” (contribution on behalf of the Euclid consortium) – Valencia (Spain)
- 15<sup>th</sup> Mar 2022 – Cosmic nuggets – A feast of compact and massive galaxies across the Universe meeting – “Relating red nuggets with relic galaxies” – Sesto (Italy)
- 10<sup>th</sup> Oct 2019 – IA-ON 6 meeting – “The secrets of massive galaxies” – Porto (Portugal)
- 13<sup>th</sup> Sep 2019 – Extremely big eyes on the early Universe meeting – “Extended galaxies in deep extragalactic fields are not an annoyance but a potential treasure trove” – Rome (Italy)

- 10<sup>th</sup> Jul 2019 – IAU Symposium 355: The realm of the low surface brightness Universe – “Stellar haloes of early-type galaxies” – Tenerife (Spain)
- 7<sup>th</sup> Jun 2019 – Euclid consortium meeting – “The smallest and the largest galaxies observed by Euclid” – Helsinki (Finland)
- 11<sup>st</sup> Sep 2018 – XXVIII<sup>th</sup> Portuguese Astronomical Society plenary talk – “Indiana Jones and where to find relic galaxies” – Coimbra (Portugal)
- 23<sup>rd</sup> Oct 2017 – “Galaxy Groups and Clusters II: Laboratories to study Galaxy Evolution” meeting – “The monster's lair: open questions about the environment of the most massive galaxies” – La Serena (Chile)
- 21<sup>st</sup> Sep 2017 – RIA-sponsored meeting “Proposing and Processing MEGARA observations with GTC” – “Why massive and compact galaxies “disappear” across cosmic time” – Madrid (Spain)
- 21<sup>st</sup> July 2017 – XXVII<sup>th</sup> Portuguese Astronomical Society Meeting plenary talk – “Is the Universe devoid of ultracompact galaxies?” – Lisbon (Portugal)
- 9<sup>th</sup> Sep 2016 – XXV<sup>th</sup> Portuguese Astronomical Society Meeting plenary talk – “The outskirts of massive early-type galaxies at  $z = 0.65$  in the Hubble Ultra Deep Field” – Aveiro (Portugal)
- 18<sup>th</sup> Mar 2016 – IAUS 321 Outskirts Of Galaxies – “The cosmic assembly of stellar haloes in massive Early-Type Galaxies” – Toledo (Spain)
- 12<sup>th</sup> Jan 2016 – “The early growth of galaxies: The HST, Spitzer and Herschel joint legacy” meeting – “Dissecting the outskirts of massive galaxies” – Sexten (Italy)
- 23<sup>rd</sup> Jul 2015 – XXV<sup>th</sup> Portuguese Astronomical Society Meeting plenary talk – “Scientific volunteering in East Africa: Opportunities in Astronomy” – Lisbon (Portugal)
- 23<sup>rd</sup> Jun 2015 – EWASS 2015 – “The outskirts of massive early-type galaxies at  $\langle z \rangle = 0.65$  in the Hubble Ultra Deep Field” – Tenerife (Spain)
- 3<sup>rd</sup> Feb 2015 – “Getting a grip on galactic girths” meeting – Are the most massive galaxies substantially different using the deepest surveys? – Tokyo (Japan)
- 28<sup>th</sup> Jan 2015 – “The Spectral Energy Distribution of high redshift galaxies: lessons learned and open questions” meeting – Are the most massive galaxies substantially different using the deepest surveys? – Sexten (Italy)
- 9<sup>th</sup> Jan 2015 – XI DEX Workshop – “The low surface brightness haloes of massive galaxies in ultradeep imaging and their relative importance” – Edinburgh (UK)
- 13<sup>th</sup> Mar 2014 – 3D2014 Gas and stars in galaxies: A multi-wavelength 3D perspective – “SINFONI/VLT 3D spectroscopy of massive galaxies: Evidence of rotational support at  $z \sim 1.4$ ” – Garching (Germany)
- 8<sup>th</sup> Jul 2013 – European Week of Astronomy and Space Science 2013 – “Ongoing assembly of massive early-type galaxies in the HUDF12” – Turku (Finland)
- 2<sup>nd</sup> Jul 2013 – National Astronomical Meeting 2013 – “Ongoing assembly of massive early-type galaxies in the HUDF12” – St Andrews (UK)
- 22<sup>nd</sup> Jan 2013 – “Shaping galaxy evolution: interactions & feedback” meeting – “Ongoing assembly of massive early-type galaxies in the HUDF12” – Observatoire de Paris (France)

- 6<sup>th</sup> Nov 2012 – Euclid-MOONS Meeting – “The entertaining life of massive galaxies: Euclid & MOONS” – Edinburgh (UK)
- 13<sup>th</sup> Jul 2012 – XI<sup>th</sup> Spanish Astronomical Society Meeting – “Massive galaxies: a gate for large area very deep galaxy surveys” – Valencia (Spain)
- 13<sup>th</sup> Jan 2012 – VIII DEX Workshop – “Evolution of massive galaxies in the era of large area surveys” – Durham (UK)
- 15<sup>th</sup> Oct 2010 – X<sup>th</sup> Spanish Astronomical Society Meeting – “Shaping massive galaxies from  $z=3$ : merging vs secular evolution” — Centro Superior de Investigaciones Científicas, Madrid (Spain)
- 1<sup>st</sup> Jul 2009 – VIII<sup>th</sup> Marseille International Cosmology Conference – “Superdense massive galaxies: sizes and evolution since  $z\sim 3$ ” — Marseille (France)
- 24<sup>th</sup> Oct 2008 – Workshop on Extragalactic Surveys – “GOODS NICMOS Survey: Imaging most massive galaxies at  $z > 2$ ” –Institute of Astrophysics of Andalusia (Spain)

## Given seminars

- 5<sup>th</sup> Jun 2024 – “Why do galaxy sizes matter?” – University of Salamanca (Spain)
- 25<sup>th</sup> Apr 2023 – “Towards a physically-motivated mass-size relation at  $0 < z < 1$ ” – CEFCA (Spain)
- 24<sup>th</sup> Apr 2023 – “Towards a physically-motivated mass-size relation at  $0 < z < 1$ ” – Universitat de Barcelona (Spain)
- 24<sup>th</sup> Mar 2023 – “Towards a physically-motivated mass-size relation at  $0 < z < 1$ ” – Universidad Autónoma de Madrid (Spain)
- 20<sup>th</sup> Mar 2023 – “The importance of galaxy sizes” – Instituto de Ciencias y Tecnologías Espaciales de Asturias (Spain)
- 17<sup>th</sup> Mar 2023 – “Towards a physically-motivated mass-size relation at  $0 < z < 1$ ” – Centro de Astrobiología (Spain)
- 24<sup>th</sup> Apr 2019 – “Indiana Jones and where to find relic galaxies” // Virtual talk – University of Rio Grande do Sul (Brazil)
- 28<sup>th</sup> Nov 2018 – “Indiana Jones and where to find relic galaxies” – IAC (Spain)
- 24<sup>th</sup> Jul 2018 – “Indiana Jones and where to find relic galaxies” – ESO lunch talk, Garching (Germany)
- 1<sup>st</sup> Nov 2017 – “Review on massive galaxies” – Instituto de Astronomia, Geofísica e Ciências Atmosféricas, University of São Paulo (Brazil)
- 18<sup>th</sup> Nov 2016 – “Galactic Extremophiles: The most massive galaxies of the Universe” – Centro de Astrobiología, Madrid (Spain)
- 9<sup>th</sup> Nov 2016 – “What's beyond my lab? Current challenges in extragalactic Astronomy” – Faculdade de Ciências, Lisboa (Portugal)
- 10<sup>th</sup> Mar 2016 – “Review about the state-of-the-art of massive galaxies” – CENTRA, Lisbon (Portugal)
- 28<sup>th</sup> Nov 2015 – “Review about the state-of-the-art of massive galaxies” – ESO Vitacura, Santiago de Chile (Chile)
- 27<sup>th</sup> Nov 2015 – “Review about the state-of-the-art of massive galaxies” – University of Valparaíso, Valparaíso (Chile)

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- 21<sup>st</sup> Sep 2015 – “Review about the state-of-the-art of massive galaxies” – IA-OAL, Lisbon (Portugal)
- 1<sup>st</sup> Oct 2014 – “News from the galaxy monsters” – University of Nottingham, Nottingham (UK)
- 19<sup>th</sup> Sep 2014 – “The history of the galaxy monsters” – IA-OAL, Lisbon (Portugal)
- 15<sup>th</sup> May 2014 – “Stellar haloes of Early-Type massive galaxies at  $z \sim 0.7$  or how to use the HUDF for local Universe studies” – Osservatorio Astronomico di Bologna, Bologna (Italy)
- 14<sup>th</sup> May 2014 – “Stellar haloes of Early-Type massive galaxies at  $z \sim 0.7$  or how to use the HUDF for local Universe studies” – Osservatorio di Arcetri, Florence (Italy)
- 12<sup>th</sup> May 2014 – “Stellar haloes of Early-Type massive galaxies at  $z \sim 0.7$  or how to use the HUDF for local Universe studies” – Osservatorio Astronomico di Roma, Rome (Italy)
- 4<sup>th</sup> Mar 2014 – “Ongoing assembly of massive early-type galaxies in the HUDF12 in the context of massive galaxy evolution” – University of St. Andrews (UK)
- 9<sup>th</sup> October 2013 – “Ongoing assembly of massive early-type galaxies in the HUDF12” – John Moores University, Liverpool (UK)
- 20<sup>th</sup> Dec 2010 – “On the nature of massive galaxies at high redshift” – IAC (Spain)
- 19<sup>th</sup> Nov 2008 – “Size evolution of the most massive galaxies at  $1.7 < z < 3$  & the GOODS NICMOS Survey” – University of Central Lancashire (UK)
- 17<sup>th</sup> Oct 2008 – “Size evolution of the most massive galaxies at  $1.7 < z < 3$  & the GOODS NICMOS Survey” – University of Durham (UK)

## Supervising experience

- 2016-2020 Supervising with Dr. Polychronis Papaderos the IA funded **PhD project** "Unveiling the formation and evolution of massive galaxies via photometric and kinematic decompositions". Student name: Sandra Reis
- 2016-2018 University of Lisbon **MPhys thesis** “A multiwavelength study of galaxy disks across cosmic time”. Student name: João Águas. Mark: 18/20.
- 2018 University of Lisbon Laboratory of Astrophysics **BSc course** project “Extracting the most accurate pixel segmentation and photometric data from astronomical images”. Student name: Henrique Miranda. Mark: 16/20.
- Summer 2018 IA **BSc BIC project** "Spectrophotometric analysis of galaxies in high density environments". Student name: Hugo Martins (+1140€ IA grant)
- 2013/2014 University of Edinburgh – Supervising with Dr. Annette Ferguson the final **MPhys thesis** "Faint Tidal Debris in Galaxies". Student name: Aron Krausz
- **Summer student** University of Edinburgh – Tamara Leitan, working on the project “High redshift galaxies: windows to the unknown” (with RAS £1200 grant)
- **Summer student** University of Edinburgh – Emma Ryan, working on the project “The effect of twisting on optical fibres for the MOONS spectrograph”
- **TFM (Physics)**: Daniel Pinilla García (Visualización de perfiles de luminosidad de galaxias a alto desplazamiento al rojo con Streamlit; calificación 9/10)
- **TFG (Physics)**: Jesús Alderete Antolín (“Truncaciones”: Buscando el límite de las galaxias), Alberto Royo Valle (Truncaciones: buscando el límite de las galaxias), Elena

Pascual Sánchez (Detección Automática de Minerales mediante Espectroscopía Raman. Acumulación por Multiplicación de Espectros, una Nueva Aproximación), Ángel Paisán García (Llegando a los límites del bajo brillo superficial en la imagen de IC1101)

- **TFG (Computer Science):** Jesús Fernández Iglesias (Desarrollo de técnicas basadas en frameworks deep learning para la caracterización de galaxias distantes), Dario Torre Guinaldo (Explotación de Frameworks Deep Learning Aplicados a la Astronomía), Jorge Barrio Conde (Análisis y Experimentación Práctica de Frameworks Deep Learning Aplicados a la Astronomía), Enrique Carpintero Gutiérrez (Identificación morfológica de galaxias en el espacio profundo mediante Deep Learning), David Población Criado (Herramienta basada en técnicas de Deep Learning para el análisis de datos generados por el telescopio ESA Euclid)
- **TFM (Computer Science):** Jesús Fernández Iglesias (Desarrollo de técnicas de visión artificial basadas en aprendizaje profundo para la delimitación de bordes de galaxias del espacio distante), Darío de la Torre Guinaldo (Técnicas de Deep Learning para la segmentación de colas de marea en imágenes astronómicas)

## Research projects

- PID2023-150393NB-I00, “**Galactic Edges and Euclid in the Low Surface Brightness Era 2 (GEELSBE2) / Bordes galácticos y Euclid en la era del bajo brillo superficial 2**”, Proyectos de Generación de Conocimiento 2023 Investigación No Orientada Tipo B por Ciencias Físicas subárea Astronomía y Astrofísica, Ministerio de Ciencia, Innovación y Universidades/Agencia Estatal de Investigación, PI: F. Buitrago (UVa) y Benjamín Sahelices (UVa), start: 1/9/2024, end: 31/08/2027, funding: 134.750€
- PID2020-116188GA-I00, “**Galactic Edges and Euclid in the Low Surface Brightness Era (GEELSBE) / Bordes galácticos y Euclid en la era del bajo brillo superficial**”, Convocatoria 2020 Proyectos de I+D+i - PGC Tipo A por Ciencias Físicas subárea Astronomía y Astrofísica, Ministerio de Ciencia e Innovación, PI: F. Buitrago (UVa), start: 1/1/2021, end: 31/12/2023, funding: 98.978€
- PTDC/FIS-AST/29245/2017, “**IdEaS with ALMA "Identifying the Earliest Supermassive Black Holes with ALMA"**”, Projeto Nacional FCT Portugal, Fundação para a Ciência e a Tecnologia, PI: J. Afonso (IA), start: 07/2018, end: 07/2021, funding: 239.885€, participating in the work group
- 2018/2019, Fundação para a Ciência e Tecnologia (Portugal) - Deutsche Akademische Austauschdienst (Germany) international collaboration Project “**The hunt for the biggest SuperMassive Black Hole**”, PI: F. Buitrago (Portugal) & G. van de Ven (Germany), funding: 22.8k€
- AYA2016-77237-C3-1-P, “**RAVET: ReAl and Virtual EllipTical galaxies**”, Proyecto de Investigación del Plan Nacional, Ministerio de Economía y Competitividad, PIs: J. Falcón Barroso (IAC), start: 01/2017, end: 12/2019, funding: 244.000€, participating in the work group
- AYA2013-48226-C3-1-P, “**RAVET: ReAl and Virtual EllipTical galaxies**”, Proyecto de Investigación del Plan Nacional, Ministerio de Economía y Competitividad, PIs: J. Falcón Barroso (IAC), A. Vazdekis (IAC), start: 01/2014, end: 12/2016, funding: 239.580€, participating in the work group



- FP7-SPACE-2012-1, “**ASTRODEEP: Unveiling the power of the deepest images of the Universe**”, FP7 European Union programme, PIs: A. Fontana (Observatory of Rome), James S. Dunlop (University of Edinburgh), D. Elbaz (CEA Paris-Saclay), start: 01/2013, end: 12/2016, funding: 2.579.646€, participating in the research group
- Other projects I am a member in: ROSALIA (Roman Sky cALibration for low surface brightness science) project has been accepted for the ROSES/Roman22 Wide Field Science call (PI A. Borlaff), Machine learning techniques applied to Galaxy Clusters: A membership determination tool based on the ESA Science Archive – PIs Ana Pérez and Ricardo Pérez, 24.95k€.

## Teaching experience

- Since Oct 2020: “**Métodos Matemáticos III**” (Statistics part), “**Métodos Matemáticos I**” in the Physics degree at UVa, “**Análisis de datos y técnicas Big Data**” and “**Nuevas fronteras**” en “**Física Matemática: Física Extragaláctica**” in the Physics master at UVa.
- Since Feb 2016: Astrofísica Extra-Galáctica: Formação e Evolução de Galáxias (AE-FEG), **Extragalactic Astrophysics: Galaxy formation and evolution, MSc course in the University of Lisbon**, 6 ECTS, Courses: 2<sup>nd</sup> semester 2015-2016, 2<sup>nd</sup> semester 2016-2017, 2<sup>nd</sup> semester 2017-2018, 2<sup>nd</sup> semester 2018-2019
- Since Feb 2016: Tópicos Avançados de Astrofísica Extra Galáctica: Formação e Evolução de Galáxias (TAAEG-FEG), **Advanced topics in Extragalactic Astrophysics: galaxy formation and evolution, PhD course in the University of Lisbon**, 6 ECTS, Courses: 2<sup>nd</sup> semester 2015-2016, 2<sup>nd</sup> semester 2016-2017, 2<sup>nd</sup> semester 2017-2018, 2<sup>nd</sup> semester 2018-2019
- Apr 2015 - May 2015 – Addis Abeba University (Entoto Observatory, Ethiopia) – **Extragalactic Astronomy Invited Lecturer**, PhD in Astronomy
- Apr 2015 – Mbarara University for Science and Technology (Mbarara, Uganda) – **Extragalactic Astronomy Invited Lecturer**, MSc in Astronomy
- 2013/2014 University of Edinburgh – **Assistant teacher** in the "Research Methods in Physics" course. Main lecturer: Richard Blythe

## Committee participation

- **Galaxies and Cosmology Commissioner** (1 period) and **Vice-Commissioner** (e periods) **for the Canary Island Night Allocation Time Committee** (from Nov19 to Jun21)
- Panelist of the **ESO OPC for periods P99, P100 and P101**
- 13<sup>th</sup> Dec 2023 – University of Oviedo (Spain) – Dr. José Manuel Casas González – **Jury of PhD thesis**: “Machine Learning in Astrophysics and Cosmology” – Mark: A+ (Cum Laude)
- 20<sup>th</sup> Apr 2023 – University of Valencia (Spain) – Dr. Javier Navarro González – **Jury for PhD thesis**: “Virtual galaxies in cosmological simulations: morphology, dynamics and evolution” – Mark: A (Sobresaliente)
- 19<sup>th</sup> Oct 2022 – University of Oviedo (Spain) – Dr. Marcos Muñoz Cueli – **Jury for PhD thesis**: “The submillimeter galaxy magnification bias: an underexploited cosmological probe” – Mark: A+ (Cum Laude)

- 7<sup>th</sup> Jan 2019 – University of Lisbon (Portugal) – Dr. Ana Sofia Paulino-Afonso – **Jury for PhD thesis:** "Star-Forming Galaxies` Structural Evolution Across Cosmic Time and Environment" – Mark: A with honours (Aprovada com distinção e louvor)
- **Jury for BSc** in Physics "Laboratory of Astrophysics" course in the University of Lisbon (Jul-17, 21 people) **and MSc thesis** in Mbarara University for Science and Technology (Aug-17, Ms. Beatrice Nyiransengiyumva)
- Mar17 – Complutense University (Spain) – External evaluator for PhD thesis from Luis A. Díaz García
- 27<sup>th</sup> Jul 2016 – University of La Laguna (Spain) – Dr. Luis Peralta de Arriba – **Jury for PhD thesis:** "Growth of massive galaxies through cosmic time" – Mark: A with honours (Sobresaliente Cum Laude)

## Other money awarded

- 2020 – **University of Valladolid senior investigator position: 5k€ + 1 PhD student** salary (own salary apart)
- 2020 – **Declined Madrid Talento 2019 Mode 1 position, with awarded 250k€ budget** (own salary apart)
- 2018 – 14000€ from FECyT (Spanish Foundation for Science and Technology) to organize the exhibition "Con A de astrónomAs".
- 2017 – 5000 Brazilian reais for my AIG visit
- 2017 – 880€ for my SISSA invited talk
- 2013 – 1000€ for the Spanish Astronomical Society Thesis Prize
- 2013 – £500 for organizing the National Astronomical Meeting Parallel Session 29

## Meeting organization

- 15<sup>th</sup> - 19<sup>th</sup> July 2024 – **Co-chair** for the "**Astronomía y Cultura**" symposium at the **Spanish Astronomical Society** meeting held in Granada (Spain) – <https://www.sea-astronomia.es/comision-astronomia-y-cultura-simposio-sea2024>
- 15<sup>th</sup> - 19<sup>th</sup> July 2024 – **Co-chair** for the "**Decyphering the Low Surface Brightness universe**" symposium at the Spanish Astronomical Society meeting held in Granada (Spain) – <https://sites.google.com/view/lsb-sea2024/>
- 21<sup>st</sup> - 22<sup>nd</sup> November 2023 – **SOC member** for the "**Machine Learning meets galaxy classification: Addressing paradigms of classification and environment of galaxies**" meeting, held at ESAC in Villafranca del Castillo (Spain) – <https://www.cosmos.esa.int/web/ml-gc/home>
- 11<sup>th</sup> - 13<sup>th</sup> July 2023 – **LOC member** for the "**VII Reunión de Ciencias Planetarias y Exploración del Sistema Solar**" meeting, held in Valladolid (Spain) – <https://www.cpress7.com/93374/detail/7th-edition-of-the-meeting-on-planetary-sciences-and-exploration-of-the-solar-system-cpress-7.html>
- 14<sup>th</sup> - 18<sup>th</sup> March 2022 – **SOC member** for the "**Cosmic nuggets – A feast of compact and massive galaxies across the Universe**" meeting, held in Sesto (Italy) – <https://www.sexten-cfa.eu/event/cosmic-nuggets/>

- 16th-20<sup>th</sup> July 2018 – **LOC coordinator and SOC member of the XIII<sup>th</sup> Spanish Astronomical Meeting (SEA 2018)**, held in the University of Salamanca, celebrating its 800th anniversary – <https://sea2018.usal.es>
- 8th-9<sup>th</sup> January 2015 – **LOC member** for the Durham-Edinburgh eXtragalactic 11th annual meeting (DEX XI) "Big Surveys + Big Simulations = Big Science" Edinburgh (UK) – <http://www.roe.ac.uk/ifa/Meetings/DEX/XI/>
- 9th-10<sup>th</sup> January 2014 – **LOC member** for the Durham-Edinburgh eXtragalactic 10th annual meeting (DEX X) "The peak of activity in the Universe" Durham (UK) – <http://astro.dur.ac.uk/DEX/X/>
- 2<sup>nd</sup> July 2013 – **SOC coordinator** for the NAM Parallel Session 29 "Declining star formation in galaxies: from primeval disks to the rise of ellipticals" held in St. Andrews (UK) – [http://www.roe.ac.uk/ifa/Meetings/NAM2013-quenching/nam2013\\_session29.html](http://www.roe.ac.uk/ifa/Meetings/NAM2013-quenching/nam2013_session29.html)
- 10th-11<sup>th</sup> January 2013 – **LOC member** for the Durham-Edinburgh eXtragalactic 9th annual meeting (DEX IX) "Physics of galaxy formation" held in Edinburgh (UK) – <http://www.roe.ac.uk/ifa/Meetings/DEX/IX/>

## Telescope time as PI

- **4 nights using WFC at INT**, programme ID 078-INT10/22A: "Testing LambdaCDM predictions with the oldest structures of the Universe"
- **3h using MUSE at VLT**, programme ID 0101.B-0808: "The hunt for the biggest black hole in the nearby Universe with MUSE"
- **4.2h using KMOS at VLT**, programme ID 60.A-9465(A): "Unveiling low redshift HUDF ETGs: their internal disks & galactic satellites" Science Verification Programme

## Poster contributions

- Jul 2024 – "Galaxy truncations as the long-sought galaxy size indicators" – European Astronomical Society meeting 2024, Padova (Italy)
- Sep 2022 – "Finding the limits of galaxies up to  $z = 1$ " – XV<sup>th</sup> Spanish Astronomical Society Meeting, Tenerife (Spain)
- Jul 2020 – "Truncations at high redshift" – XIV<sup>th</sup> Spanish Astronomical Society Meeting, Virtual Meeting
- Jul 2018 – "Studying Astronomy in Portugal and the IA, the best choice for your future career" – XIII<sup>th</sup> Spanish Astronomical Society Meeting, Salamanca (Spain)
- Jul 2018 – "Accurate number densities and environment for compact and relic massive galaxies" – XIII<sup>th</sup> Spanish Astronomical Society Meeting, Salamanca (Spain)
- Aug 2016 – "Stellar haloes in massive early-type galaxies" – XII<sup>th</sup> Spanish Astronomical Society Meeting, Bilbao (Spain)
- Aug 2012 – "Massive galaxies: born as disks, dead as spheroids" – XXVIII<sup>th</sup> IAU General Assembly, Beijing (China)
- Sep 2010 – "3D Spectroscopy unveils Massive Galaxies at High- $z$  Evolution" – Joint European and National Astronomy Meeting (JENAM) – Lisbon (Portugal)
- Jul 2008 – "Extremely Compact Massive Galaxies at  $1.7 < z < 3$ " – VIII<sup>th</sup> Spanish Astronomical Society Meeting – Universidad de Cantabria (Spain)

## Outreach activities

- Lots of talks in English/Portuguese/Spanish for schools, high schools and other associations
- **June 2017 and April 2019: Title page & article in “Astronomia”**, outreach astronomical monthly journal in Spanish-speaking countries
- **IGNITE** talks in Campo Maior (30 people), Lisbon (360 people), óbidos (30 people), Figueira de Castelo Rodrigo (100 people)  
*http://www.iaastro.pt/outreach/activities/ignite/*
- **Noites do Observatório** talks: “As galáxias e o infinito” (30th Abr 16, 200 people) and “Mitos e lendas na Astronomia” (25th Feb 2017, 360 people), “O Universo para além da imaginação” (16th Dec 2017, 315 people)
- 2013-2015 – **Meet the Astronomer activity** – Royal Observatory of Edinburgh Visitor Center (UK)
- **Stars ‘R’ Us activity** – University of Nottingham (UK) activity during academic year 2009/2010
- 17th Jun 2010 — Public Astronomy Lecture Series “History of Space Exploration: Looking for New Horizons” – University of Nottingham (UK)
- 18th Sep 2009 – International Year of Astronomy Talk “The universe and its galaxies” – University of Salamanca (Spain)
- 6th Nov 2009 – “The Astronomy’s blue horizon” **Article in El País** Newspaper Digital Edition *http://www.elpais.com/articulo/sociedad/horizonte/azul/astronomia/elpepusoc/20091106elpepusoc\_7/Tes\\*
- **Leisure time activities instructor** by the CENSA school (270h)

## Software applications

- Full software package developed for **BSc degree final project** titled “Photometric and spectroscopic study of high redshift massive galaxies using IDL” under the supervision of Dr. Juan Manuel Corchado (University of Salamanca, Spain)

## Others

- **Euclid’s “Diffuse light” Working Package (WP-DIF) leader within the Local Universe Working Group (SWG-LU)**
- **Nature Astronomy, ApJ, MNRAS, Astronomy & Astrophysics and Frontiers Referee**
- **Evaluator for Spanish Ministry of Science Ramón y Cajal 2024 programme**
- **Evaluator for FONDECYT (National Chilean Science Foundation) for Regular Projects**
- **I3 certificate for excellence in research from the Spanish Ministry of Universities**
- **Six-year term (Sexenio) of recognized research: 2008-2013, 2014-2019**
- **Co-leading joint Euclid-ARRAKIHS simulation project**
- Member of the UltraVISTA, CANDELS, SHARDS, S-PLUS, VANDELS, Euclid and JWST CEERS surveys

# Fernando Buitrago

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# Curriculum Vitae

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*Phone (private): (+34) 636 844 203*

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- **GTO Member** for the EMIR@GTC and MOONS@VLT near-infrared spectrographs
- External examiner for the MSc thesis of: Beatrice Nyiransengiyumva (University of Rwanda, Rwanda) and Privatus Pius (University of Dodoma, Tanzania)
- Active member in the **Euclid Galaxy Morphology Working Group**
- Active member in the **MOONS' Passive Galaxies, AGNs and Environment Working Groups**
- Member of the Spanish Astronomical Society (SEA), the Portuguese Astronomical Society (SPA) and the International Astronomical Union (IAU)
- Active member of the IAU subWorking Group Hospitals, Children's Homes, Nursing Homes and Prisons
- **Chair** for the European Astronomical Society meeting Session 17 "Compact passive and massive galaxies across the Universe" held virtually in Leiden (Netherlands) on 30<sup>th</sup> June 2020
- **Chair** for the IAU Symposium 355 "The realm of the low surface brightness Universe" held in Tenerife (Spain) on the 10<sup>th</sup> July 2019
- **Chair** for the session "Astronomy in Portugal/Collaborations Portugal-Spain" in the XIIIth Spanish Astronomical Meeting (SEA 2018) on 17<sup>th</sup> July 2018
- Ex-fellow of the Royal Astronomical Society and ex-member of the European Astronomical Society
- Ex-member of the Society of Spanish Researchers in the UK (SRUK/CERU)
- Ex-member of the Research Staff Society and the Equality & Diversity Committee of the University of Edinburgh's School of Physics & Astronomy
- Coffee talks' organizer in the Royal Observatory of Edinburgh (from March 2013 to March 2015)
- Seminars' organizer in the Instituto de Astrofísica e Ciências do Espaço (from January 2016 to January 2018)

## SKILLS:

### Languages

- Spanish: Mother tongue
- English: Fluent (both spoken and written)
- Portuguese: Fluent (both spoken and written)
- Italian: Intermediate (both spoken and written)

### Computation

- Programming languages: Python, IDL, C, Fortran, Matlab, HTML, SQL, Java, PHP (GitHub username fbuitrago)
- Other software: IRAF, LaTeX, Virtual Observatory and associated databases
- Phase 2 preparation experience for KMOS@VLT, MUSE@VLT and MEGARA@GTC
- Large experience with GALFIT, SExtractor and ESO data reduction pipeline

## Telescope experience

- **27-30th May 2022** at Isaac Newton Telescope (2.5 m) – Wide Field Camera instrument – **Roque de los Muchachos Observatory** (Spain)
- **20-27th Nov 2016** at UT3 Melipal (8.2 m) for the VANDELS survey – VIMOS optical MOS instrument – **Cerro Paranal Observatory** (Chile)
- **15-20th Nov 2015** at UT3 Melipal (8.2 m) for the VANDELS survey – VIMOS optical MOS instrument – **Cerro Paranal Observatory** (Chile)
- **20-24th Sep 2008** at William Herschel Telescope (4.2 m) – LIRIS near-infrared MOS instrument – **Roque de los Muchachos Observatory** (Spain)
- **10th Oct 2007** at William Herschel Telescope (4.2 m) – PFIP wide field camera – **Roque de los Muchachos Observatory** (Spain)