Curriculum Vitae

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Personal information:

Full name: Fernando Buitrago Alonso ORCID ID: 0000-0002-2861-9812

Address: Department of Theoretical, Atomic and Optical Physics, Faculty of Science Office B215, Paseo de Belen 7, University of Valladolid, Valladolid 47011, Spain

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 Convidado)

Working at the Institute for Astrophysics and Space Sciences -IA- 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)

 $\bullet~$ Apr 2008 - July 2012: PhD Thesis: Structural evolution of massive galaxies in the last 11 Gyr

University of Nottingham (UK)

Supervisors: Prof. Christopher J. Conselice (Univ. Nottingham, UK), Dr. Ignacio Trujillo (IAC, Spain) and Prof. Alfonso Aragón-Salamanca (Univ. 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 2008: **MSc in Physics** (5-yr degree), University of Salamanca (Spain)

Awards:

- **Prize for the Best Spanish Thesis in Astronomy 2012** (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 13-Dec-2020, according to NASA ADS, I have 2383 citations (including two first author papers with 328 and 121 citations each), 40 papers in high-impact international journals, h-index: 26

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Metrics from SCOPUS: Citations: 2010 / h-index: 23 / 48 publications

Metrics from WoS: Citations: 1970 / h-index: 23 / 64 publications / 14 reviews

Metrics from Google Scholar: Citations: 3088 / h-index: 26

Invited talks (Total: 8)

• 15th July 2020 – **XIV**th **Spanish Astronomical Meeting** – **Round table on professional prospects** – Virtual conference

- 13th July 2020 **XIV**th **Spanish Astronomical Meeting Summary of all Extragalactic Astronomy contributions** Virtual conference
- 30th 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)
- 26th Apr 2019 **Charlas de Física Workshop (outreach) "A Universe made of galaxies"** Valladolid (Spain)
- 25th Apr 2019 Charlas de Física Workshop (research) "The most massive galaxies of the Universe" Valladolid (Spain)
- 20th Jun 2017 SISSA Invited seminar "Pressing and pending questions about massive galaxies" Trieste (Italy)
- 8th Jul 2014 XIIth Spanish Astronomical Society Meeting plenary talk "Structural evolution of massive galaxies in the last 11 Gyr" Teruel (Spain)
- 4th Oct 2013 **IVICFA Workshop** "The most massive galaxies living in a ΛCDM Universe" Valencia (Spain)

Conference talks (Total: 26)

- 10th Oct 2019 IA-ON 6 meeting "The secrets of massive galaxies" Porto (Portugal)
- 13th 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)
- 10th Jul 2019 IAU Symposium 355: The realm of the low surface brightness Universe "Stellar haloes of early-type galaxies" Tenerife (Spain)
- \bullet 7th Jun 2019 Euclid consortium meeting "The smallest and the largest galaxies observed by Euclid" Helsinki (Finland)
- 11st Sep 2018 XXVIIIth Portuguese Astronomical Society plenary talk "Indiana Jones and where to find relic galaxies" Coimbra (Portugal)
- 23rd 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)
- 21st Sep 2017 RIA-sponsored meeting "Proposing and Processing MEGARA observations with GTC" "Why massive and compact galaxies "disappear" across cosmic time" Madrid (Spain)
- 21st July 2017 XXVIIth Portuguese Astronomical Society Meeting plenary talk "Is the Universe devoid of ultracompact galaxies?" Lisbon (Portugal)

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- 9^{th} Sep $2016 XXV^{th}$ 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)
- 18th Mar 2016 IAUS 321 Outskirts Of Galaxies "The cosmic assembly of stellar haloes in massive Early-Type Galaxies" Toledo (Spain)
- 12th Jan 2016 "The early growth of galaxies: The HST, Spitzer and Herschel joint legacy" meeting "Dissecting the outskirts of massive galaxies" Sexten (Italy)
- 23rd Jul 2015 XXVth Portuguese Astronomical Society Meeting plenary talk "Scientific volunteering in East Africa: Opportunities in Astronomy" Lisbon (Portugal)
- 23^{rd} 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)
- 3rd Feb 2015 "Getting a grip on galactic girths" meeting Are the most massive galaxies substantially different using the deepest surveys? Tokyo (Japan)
- 28th 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)
- 9th Jan 2015 XI DEX Workshop "The low surface brightness haloes of massive galaxies in ultradeep imaging and their relative importance" Edinburgh (UK)
- 13th 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~1.4" Garching (Germany)
- 8th Jul 2013 European Week of Astronomy and Space Science 2013 "Ongoing assembly of massive early-type galaxies in the HUDF12" Turku (Finland)
- 2nd Jul 2013 National Astronomical Meeting 2013 "Ongoing assembly of massive early-type galaxies in the HUDF12" St Andrews (UK)
- 22nd Jan 2013 "Shaping galaxy evolution: interactions & feedback" meeting "Ongoing assembly of massive early-type galaxies in the HUDF12" Observatoire de Paris (France)
- \bullet 6th Nov 2012 Euclid-MOONS Meeting "The entertaining life of massive galaxies: Euclid & MOONS" Edinburgh (UK)
- 13th Jul 2012 XIth Spanish Astronomical Society Meeting "Massive galaxies: a gate for large area very deep galaxy surveys" Valencia (Spain)
- 13^{th} Jan 2012-VIII DEX Workshop "Evolution of massive galaxies in the era of large area surveys" Durham (UK)
- 15^{th} Oct $2010 X^{th}$ Spanish Astronomical Society Meeting "Shaping massive galaxies from z=3: merging vs secular evolution" Centro Superior de Investigaciones Científicas, Madrid (Spain)
- 1st Jul 2009 VIIIth Marseille Interational Cosmology Conference "Superdense massive galaxies: sizes and evolution since z~3" Marseille (France)
- 24^{th} Oct 2008 Workshop on Extragalactic Surveys "GOODS NICMOS Survey: Imaging most massive galaxies at z > 2" –Institute of Astrophysics of Andalucia (Spain)

Given seminars (Total: 20)

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- 24th Apr 2019 "Indiana Jones and where to find relic galaxies" // Virtual talk University of Rio Grande do Sul (Brazil)
- 28th Nov 2018 "Indiana Jones and where to find relic galaxies" IAC (Spain)
- 24th Jul 2018 "Indiana Jones and where to find relic galaxies" ESO lunch talk, Garching (Germany)
- 1st Nov 2017 "Review on massive galaxies" Instituto de Astronomia, Geofísica e Ciências Atmosféricas, University of São Paulo (Brazil)
- 18th Nov 2016 "Galactic Extremophiles: The most massive galaxies of the Universe" Centro de Astrobiología, Madrid (Spain)
- 9th Nov 2016 "What's beyond my lab? Current challenges in extragalactic Astronomy" Faculdade de Ciências, Lisboa (Portugal)
- 10th Mar 2016 "Review about the state-of-the-art of massive galaxies" CENTRA, Lisbon (Portugal)
- 28th Nov 2015 "Review about the state-of-the-art of massive galaxies" ESO Vitacura, Santiago de Chile (Chile)
- 27th Nov 2015 "Review about the state-of-the-art of massive galaxies" University of Valparaíso, Valparaíso (Chile)
- 21st Sep 2015 "Review about the state-of-the-art of massive galaxies" IA-OAL, Lisbon (Portugal)
- ullet 1st Oct 2014 "News from the galaxy monsters" University of Nottingham, Nottingham (UK)
- 19th Sep 2014 "The history of the galaxy monsters" IA-OAL, Lisbon (Portugal)
- 15^{th} May 2014 "Stellar haloes of Early-Type massive galaxies at $z\sim0.7$ or how to use the HUDF for local Universe studies" Osservatorio Astronomico di Bologna, Bologna (Italy)
- 14th May 2014 "Stellar haloes of Early-Type massive galaxies at z~0.7 or how to use the HUDF for local Universe studies" Osservatorio di Arcetri, Florence (Italy)
- 12^{th} May 2014 "Stellar haloes of Early-Type massive galaxies at $z\sim0.7$ or how to use the HUDF for local Universe studies" Osservatorio Astronomico di Roma, Rome (Italy)
- 4th Mar 2014 "Ongoing assembly of massive early-type galaxies in the HUDF12 in the context of massive galaxy evolution" University of St. Andrews (UK)
- 9th October 2013 "Ongoing assembly of massive early-type galaxies in the HUDF12" John Moores University, Liverpool (UK)
- 20th Dec 2010 "On the nature of massive galaxies at high redshift" IAC (Spain)
- 19^{th} Nov 2008 "Size evolution of the most massive galaxies at 1.7 < z < 3 & the GOODS NICMOS Survey" University of Central Lancashire (UK)
- 17^{th} 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 decomposions". Student name: Sandra Reis

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- 2016-2018 University of Lisbon **MPhys thesis** "A multiwavelenght 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"

Teaching experience

- 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: 2nd semester 2015-2016, 2nd semester 2016-2017, 2nd semester 2017-2018, 2nd 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: 2nd semester 2015-2016, 2nd semester 2016-2017, 2nd semester 2017-2018, 2nd 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 Vice-Commisioner for the Canary Island Night Allocation Time Committee (4 periods: from Nov19 to Jun21)
- Panelist of the ESO OPC for periods P99, P100 and P101
- 7th 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

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• 27th 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)

Money awarded

- 2020 University of Valladolid senior investigator position: 15k€ + 1 PhD student salary (own salary apart)
- 2020 Declined Madrid Talento 2019 Mode 1 position, with awarded 250k€ budget (own salary apart)
- 2019 4000€ for the FCT-DAAD collaboration "The hunt for the biggest supermassive black hole" (+9440€ from Germany; German PI G. van de Ven)
- 2018 4000€ for the FCT-DAAD collaboration "The hunt for the biggest supermassive black hole" (+9440 € from Germany; German PI G. van de Ven)
- 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

Research projects

- PID2019-107427GB-C32, "**Real and Virtual galaxies: galaxy formation through cosmic history**", Proyecto de Investigación del Plan Nacional I+D+i 2019, Ministerio de Ciencia, Innovación y Universidades, PIs: Ignacio Martín Navarro (IAC), start: 1/6/2020, end: 31/5/2023, funding: 139.150€, participating in the work group
- 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
- 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

Meeting organization

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- 16th-20th July 2018 **LOC coordinator and SOC member of the XIIIth Spanish Astronomical Meeting (SEA 2018)**, held in the University of Salamanca, celebrating its 800th anniversary *https://sea2018.usal.es*
- 8th-9th 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-10th 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*/
- 2nd 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
- 10th-11th 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

- **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

- $\bullet\,$ Jul 2020 "Truncations at high redshift" XIV th Spanish Astronomical Society Meeting, Virtual Meeting
- Jul 2018 "Studying Astronomy in Portugal and the IA, the best choice for your future career" XIIIth Spanish Astronomical Society Meeting, Salamanca (Spain)
- Jul 2018 "Accurate number densities and environment for compact and relic massive galaxies" XIIIth Spanish Astronomical Society Meeting, Salamanca (Spain)
- Aug 2016 "Stellar haloes in massive early-type galaxies" XIIth Spanish Astronomical Society Meeting, Bilbao (Spain)
- Aug 2012 "Massive galaxies: born as disks, dead as spheroids" XXVIIIth 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" VIIIth Spanish Astronomical Society Meeting Universidad de Cantabria (Spain)

Outreach activities

- Lots of talks in English/Spanish/Portuguese 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

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- **IGNITE** talks in Campo Maior (30 people), Lisbon (360 people), óbidos (30 people), Figueira de Castelo Rodrigo (100 people) http://www.iastro.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

- ApJ, MNRAS, Astronomy & Astrophysics and Frontiers Referee
- Member of the UltraVISTA, CANDELS, SHARDS, S-PLUS, VANDELS, Euclid and JWST CEERS **surveys**
- **GTO Member** for the EMIR@GTC and MOONS@VLT near-infrared spectrographs
- Active member in many international Working Groups: **Euclid** (Galaxy Morphology, Passive Galaxies), **MOONS** (Passive Galaxies), **Vera C. Rubin** (Galaxies, Low Surface Brightness)
- 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 30th June 2020
- **Chair** for the IAU Symposium 355 "The realm of the low surface brightness Universe" held in Tenerife (Spain) on the 10th July 2019
- **Chair** for the session "Astronomy in Portugal/Collaborations Portugal-Spain" in the XIIIth Spanish Astronomical Meeting (SEA 2018) on 17th July 2018

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- 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

- **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 wield field camera **Roque de los Muchachos Observatory** (Spain)