

## CURRICULUM VITAE

# DAVID R. S. G. SOBRAL

### Reader in Astrophysics

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### EDUCATION

#### University of Edinburgh – Ph.D. in Astrophysics

November 2011

Institute for Astronomy, School of Physics and Astronomy, Edinburgh, UK

Thesis: *The Star formation history of the Universe and its Drivers*

Supervisor: Prof. Philip Best

#### University of Lisbon – B.Sc. in Physics, Astronomy and Astrophysics

July 2007

Department of Physics, Faculty of Sciences, Lisbon, Portugal

### PROFESSIONAL APPOINTMENTS

Reader in Astrophysics, University of Lancaster, UK

Aug 2018–

Lecturer in Astrophysics, University of Lancaster, UK

Jan 2016–Jul 2018

FCT/IF Starting Grant (**PI**); Assistant Researcher, FCUL (U. Lisbon), Portugal

Dec 2013– Jan 2016

VENI Fellow – Postdoctoral Researcher, Leiden Observatory, The Netherlands

Sep 2012– Sep 2016

NOVA Fellow – Postdoctoral Researcher, Leiden Observatory, The Netherlands

Sep 2011– Sep 2012

FCT Doctoral Fellow, Institute for Astronomy, University of Edinburgh, UK

Sep 2007– Sep 2011

### PUBLICATION RECORD (see attached sheet for details)

Articles in refereed journals: **104**. As 1st (2nd) author: **18 (40)**; **6** 1st-author papers have > **100** citations each. Citations: > **3700**. Citations 1st author: > **1200**. *h*-index: **36**, *i*100-index: **10**; *i*10-index: **71**.

### RESEARCH INTERESTS

Galaxy formation and evolution; star-forming galaxies; Wide-field narrow-band surveys; H $\alpha$  emitters: dynamics, metallicities, clustering, morphologies, nature vs nurture, merging clusters; emission-line surveys; star formation history; Ly $\alpha$  emitters: properties, evolution; re-ionization; First-generation stars.

### SELECTED GRANTS (PI), AWARDS, INVITATIONS & PRIZES

Observational Astrophysics PATT grant (STFC, **PI**)

2018-20

Observational Astrophysics PATT grant (STFC, **PI**)

2016-18

Severo Ochoa invited visitor to the Instituto de Astrofísica de Canarias (IAC)

2017

Lancaster University Early Career Internal Grant (**PI**)

2016

FCT Investigator start-up grant (**PI**, EUR 50,000)

2013-16

FCT Investigator 5-year Starting Grant (**PI**, Top 5% of > 1000 candidates, maximum grade)

2013-16

NWO Veni Grant/Fellowship (**PI**, EUR 250,000)

2012-16

RAS Michael Penston for the best doctoral thesis in Astronomy or Astrophysics: runner-up

2012

Cormack Postgraduate Prize for the best paper in Scotland (Royal Society of Edinburgh)

2012

NOVA Postdoctoral Fellowship (**PI**, EUR 70,000p.a., Leiden University)

2011-14

SET for BRITAIN Awards Finalist (UK Parliament, Westminster)

2011

FCT Ph.D Fellowship (Ph.D, EUR 30,000p.a., Fundação para a Ciência e a Tecnologia)

2007-11

## OBSERVING EXPERIENCE

Over **150 nights** of observing experience on Mauna Kea, La Silla and La Palma; 28 observing runs on UKIRT, Subaru, Keck, NTT, INT, WHT and TNG (using WFCAM, Suprime-Cam, FMOS, MOSFIRE, OSIRIS, DEIMOS, NICS, SofI, WFC, LIRIS, AF2). Service mode as PI on HST, VLT, ALMA, Subaru, CFHT, VST.

## SELECTED SUCCESSFUL TELESCOPE PROPOSALS

- “The hosts of the early ionising bubbles at  $z \sim 7$  with GTC/EMIR” (2018A, **PI, 12h, GTC/EMIR**)
- “A large, matched, Ly $\alpha$ -H $\alpha$  survey at  $z = 2.23$ ” (2017B **PI, 2 nights**, CFHT/MegaCam)
- “The largest Lyman- $\alpha$  survey at  $z \sim 2.4$ ” (2014B, 2016A, 2017A **PI, 86 hours**, ESO/VST)
- “HAWKI into the epoch of re-ionisation: a  $z = 7.7$  pilot” (2016B, **PI, 44h, VLT/HAWKI**)
- “The hosts of the early ionized bubbles at  $z \sim 7$ ” (Cycle 24, **PI, 12 orbits, Hubble Space Telescope**)
- “Spectroscopy of the most luminous  $z \sim 2.2$  Ly $\alpha$  emitters” (2016B, **PI, 6h, VLT/X-SHOOTER**)
- “The nature and evolution of Ly $\alpha$  emitters at  $z \sim 3 - 7$ ” (2016B, **PI, 7 nights**, AF2-WHT/ING)
- “The gas-metallicity and the ISM of CR7” (Cycle 23, **PI, 5 orbits, Hubble Space Telescope**)
- “The nature and evolution of luminous Ly $\alpha$  emitters” (2016B, **PI, 21.6h, VLT/X-SHOOTER**)
- “Gas and dust in the most luminous Ly $\alpha$  emitter at  $z > 6$ : PopIII?” (Cycle 3, **PI, 6.3 hours, ALMA**)
- “A large, matched, Ly $\alpha$ -H $\alpha$  survey at  $z = 2.23$ ” (15B,16A,16B **PI, 9 nights**, CFHT/MegaCam)
- “The most luminous  $z = 6.6$  Ly $\alpha$  emitters” (2015A, **DDT 294.A-5039, 5018, PI, 9.3h**, ESO/VLT)
- “The ESO/LEGA-C Public Spectroscopic Survey” (2014-19, co-I, **128 nights**, ESO/VLT)
- “SFGs in clusters: are they dustier, or being quenched?” (2014B, **PI, 4 nights**, WHT/ING)
- “Spectroscopic follow-up of candidate  $z > 6$  line emitters” (2014B, **PI, 3 nights**, WHT/ING)
- “A large, perfectly matched, Ly $\alpha$ -H $\alpha$  survey at  $z = 2.23$ ” (2014A&B, **PI, 18 nights**, INT/ING)
- “Probing the  $z=1.0$  Kennicutt-Schmidt law by combining ALMA and KMOS” (Cycle 2, Co-I, 4h, ALMA)
- “A resolved view to star-forming galaxies at  $z = 1.47 - 2.23$ ” (Cycle 2, Co-I, 14h, ALMA)
- “Completing Subar-HiZELS: a H $\alpha$ -[OII] matched survey at  $z = 1.47$ ” (2014A, 13A, **PI, 3 nights**, Subaru)
- “SINFONI Spectroscopy of  $z = 8.8$  Ly $\alpha$  candidates” (13B, 14A **PI, 17 hours**, ESO/VLT+WHT/ING)
- “KMOS-CFHiZELS: dynamics and chemistry of SFGs at  $z=0.8$ ”, (2013 SV, **PI, 4 hours**, KMOS/VLT)
- “Exploiting the synergy between early ALMA and VLT/AO-IFU” (Cycle 1, Co-I, 6 hours, ALMA)
- “SINFONI-HiZELS: star-forming galaxies across cosmic time” (2013B, Co-I, 52 hours, ESO/VLT)
- “A wide H $\alpha$  narrow-band survey at  $z \sim 0.2$ ” (2013B, **PI, 5 nights**, INT/ING)
- “Shock and Awe: an H $\alpha$  survey of merging clusters” (2012B, 2013B, Co-I, 17 nights, INT/ING)
- “A large, perfectly matched, Ly $\alpha$ -H $\alpha$  survey at  $z = 2.23$ ” (2013A, **PI, 13 nights**, INT/ING)
- “HiZELS-deep: The nature of faint star-forming galaxies at  $z = 2.23$ ” (2013A, Co-I, 14 nights, UKIRT)
- “The role of the environment at  $z \sim 1$  with a super-cluster” (2012B, **PI, 35 hrs**, VLT)
- “Do cluster collisions change the history of cluster galaxies?” (2012B, Co-I, 520 hours, WSRT)
- “The widest, contiguous narrow band survey at  $z \sim 1 - 9$ ” (2012B, **PI, 3 nights**, CFHT)
- “Hunting Ly $\alpha$  blobs at  $z \sim 3$  like never before” (2012B, **PI, 6 nights**, INT/ING)
- “The nature and evolution of luminous H $\alpha$  emitters at  $z \sim 0.8 - 2.2$ ” (2012B, **PI, 4 nights**, WHT/ING)
- “The widest, contiguous narrow band survey at  $z \sim 1 - 9$ ” (2012A, 2011B, **PI, 4 nights**, CFHT)
- “The nature and evolution of luminous H $\alpha$  emitters at  $z \sim 0.8 - 2.2$ ” (2012A, **PI, 4 nights**, ESO/NTT)
- “The nature of bright H $\alpha$  emitters at  $z \sim 1.5$ ” (2012A, 2011A, **PI, 5 nights**, TNG)
- “Re-ionisation beacons: a wide NB survey for Ly $\alpha$  emitters” (2012A, Co-I, 36 hours, ESO/VISTA)
- “The mass-metallicity relation and sSFR for galaxies at  $z > 1$ ” (2012A, Co-I, 2 nights, Subaru)
- “The role of the environment at  $z \sim 1$  with a super-cluster” (2011B, 2010B, **PI, 37 hrs**, VLT)
- “The nature of the most luminous H $\alpha$  emitters” (2011B, **PI, 3 nights**, ESO/NTT)
- “Subar-HiZELS: a multiple and matched NB survey at  $z=1.47$ ” (2011A, 2010B, **PI, 2.5 nights**, Subaru)
- “The faint-end of the  $z=1.47$  H $\alpha$  luminosity function” (2010B, **PI, 5 nights**, UKIRT)
- “HiZELS: the Hi-z Emission Line Survey” (2009, Co-I, 33 nights, UKIRT)

## **SUPERVISION OF PhD STUDENTS (2 on-going, 5 completed)**

- Sergio Santos (on-going): The nature of early galaxies from  $z \sim 2$  to  $z \sim 6$  2016-2020
- Joao Calhau (on-going): The co-evolution of galaxies and their super-massive black holes 2015-2019
- Jorryt Matthee (now Zwicky fellow at ETH): Identifying the origins of galaxy formation 2014-2018
- Ana Afonso (now fellow at MPA): SFGs and their structure across time and environment 2014-2018
- Ali Ahmad Khostovan (now fellow at NASA Goddard); High redshift Emission Line Surveys 2013–2018
- Andra Stroe (now Clay Fellow at CfA); When Galaxy Clusters Collide 2011-2015
- Behnam Darvish (now postdoc at Caltech); Evolution of Galaxies in the Cosmic Web 2011-2015

## **SUPERVISION OF MSc STUDENTS (4 on-going, 12 completed)**

- “Searching for metal-poor stars in the Milky Way’s halo’, Alice Pygott, Alex Boyd 2018-2019
- “Searching for metal-poor stars in the Milky Way’s halo’, Ayendra Moonemalle 2018-2019
- “Large Ly $\alpha$  haloes around distant galaxies’, Charlie Whittington 2018-2019
- “The roles of nature and nurture in the LEGA-C survey”, Richard Kearns 2017-2018
- “The roles of nature and nurture in galaxy evolution”, Joe Cairns and Jake Brunson 2017-2018
- “Faint [CII] emitters around bright galaxies in the re-ionisation epoch”, Laurence Day 2017-2018
- “On the warm-hot interstellar medium of high-redshift galaxies”, Lara Alegre (U. Lisbon) 2016-2017
- “The first stars and black holes: observations & modelling”, Jake Harding (U. Lancaster) 2016-2017
- “Slicing the COSMOS: hunting for luminous Ly $\alpha$  emitters”, Alex Forshaw (U. Lancaster) 2016-2017
- “Slicing the COSMOS: hunting for luminous Ly $\alpha$  emitters”, Thomas Rose (U. Lancaster) 2016-2017
- “The largest Ly $\alpha$  NB survey at  $z = 5.7$ ”, Sergio Santos (MSc, U. Lisbon, 20/20) 2015-2016
- “A simple empirical model for galaxy evolution since  $z = 2.23$ ”; Fei Li (MSc, Leiden-ETH) 2013
- “Near-IR spectroscopy of luminous H $\alpha$  emitters at  $z = 0.8 - 2.23$ ”; Saul Kohn (MSc, Leiden-ROE) 2013
- “A very wide narrow-band survey: searching for Ly $\alpha$  at  $z \sim 9$ ”; Jorryt Matthee (MSc, Leiden) 2012-2013

## **SUPERVISION OF BSc STUDENTS (31 on-going; 24 completed)**

- Observational Astrophysics Group project (PHY369): 31 students in 5 projects 2019
- “XGAL-Lancaster internships” (<https://xgalweb.wordpress.com>): 8 students 2018
- “XGAL-Lancaster internships” (<https://xgalweb.wordpress.com>): 6 students 2017
- “XGAL Research Fellows”: Brenda Miranda, Santosh Harish, Sergio Santos, Lara Alegre 2015
- “From the First Galaxies to the Milky Way: research internship”, Sergio Santos (BSc) 2015
- “A matched, wide-field Ly $\alpha$  - H $\alpha$   $z=2.23$  survey”; Carolina Duarte (BSc, Lisbon) 2013-2014
- “Searching for luminous Ly $\alpha$  emitters at  $z \sim 6 - 7$ ”; Sergio Santos (BSc, Lisbon) 2013-2014
- “A large  $z \sim 0.2$  H $\alpha$  survey”; Ruben Goncalves (BSc, Lisbon) 2013-2014
- “Ly $\alpha$  blobs at  $z \sim 2 - 3$ ”; Arthur Bosman & Sierk Terwisga (BSc, Leiden) 2012-2013

## **TEACHING EXPERIENCE**

### **Fellow of the Higher Education Academy (FHEA) since November 2016**

### **13 different modules/courses taught - Physics, Astronomy & Astrophysics**

- 2018/19 PHYS369 - Observational Astrophysics Group Project (New module, Lancaster University)
- 2018/19 PHYS263 - Astronomy (Lecturer, Lancaster University)
- 2018/19 PHYS111 - Functions and Differentiation (Lecturer, Lancaster University)
- 2017/18 PHYS264 - Astrophysics I (Lecturer, Lancaster University)
- 2017/18 PHYS263 - Astronomy (Lecturer, Lancaster University)
- 2017/18 PHYS111 - Functions and Differentiation (Lecturer, Lancaster University)
- 2016/17 PHYS263 - Astronomy (Lecturer, Lancaster University)
- 2016/17 PHYS111 - Functions and Differentiation (Lecturer, Lancaster University)
- 2015/16 PHYS263 - Astronomy (Lecturer, Lancaster University)
- 2014/15 Advanced Topics in Galaxies (Invited Lecturer, University of Porto, PhD course)

2014/15 Extragalactic Astrophysics: Galaxy Formation and Evolution (Lecturer, University of Lisbon)  
 2013/14 Astronomy and Astrophysics (Lecturer, University of Lisbon)  
 2010/11 (S1) Quantification for Life Sciences; Physics of Stars and Nebulae; Astrophysics 3 (U. Edinburgh)  
 2009/10 (S2) High-Energy Astro; Astrophysics 3; Astrophysics labs; Physics 1B; Astro1G (U. Edinburgh)  
 2009/10 (S1) Astronomy 1S; Quantification for Life Sciences; Physics of Stars and Nebulae (U. Edinburgh)  
 2008/09 Physics 1B; Physics 1B laboratories; Astro 1G; Physics of Stars and Nebulae (U. Edinburgh)  
 2007/08 Physics 1B; Physics 1B laboratories; Astro 1G; Physics of Stars and Nebulae (U. Edinburgh)

## LEADERSHIP, MANAGING & SERVICE EXPERIENCE

- Founder of the Young Scientists Alumni group, Youth Foundation, Portugal (2018)
- Portuguese Representative in the ESO User’s Committee (2014-2017)
- Co-lead of ESA/FLARE SWG2: “FLARE IFU spectroscopy at high-z”
- SOC member: “Early stages of Galaxy Cluster Formation”, ESO Workshop, (ESO, 2017)
- Member of Selection Committees for hiring new PhD students and Postdocs (2015-16)
- Reviewer/referee for OPTICON, Belgium’s National funding agency VWO and FONDECYT Chile
- Frequent Reviewer (~ 7 papers per year) for the Astrophysical Journal (ApJ), the Astrophysical Journal Letters (ApJL), Monthly Notices of the Astronomical Society (MNRAS), Science, A&A, PASJ.
- Board member of the Portuguese Astronomical Society (SPA, 2015-2019)
- SOC member and organiser of High-z session at NAM, Nottingham (2016)
- SOC member: “Escape of Lyman radiation from galactic labyrinths”, (Crete, 2016)
- IA-Lisbon Seminar organiser (2015)
- ESO OPC Panel A member/referee P95+P96 - ESO Observing Programme Committee (2014-2015)
- **PI** of the XGAL research group, (2014–); Co-I of the 128 nights ESO/VLT spectroscopic survey LEGA-C
- Member of the J-PAS collaboration (2015–)
- SOC member of the international conference DEEP15 (“At the Edge of the Universe”), March 2015
- SOC member of the Portuguese National Astronomy Meeting ENAA 2014 and GALAXIES::ON!
- Selection Committee for hiring new PhD students within the FCT-funded PhD::SPACE program (2014)
- Coffee talk and Journal club organiser at CAAUL/Lisbon (2014–2015)
- Organiser of LEAPS: The Leiden/ESTEC Astrophysics Program for Summer Students (2013)
- Responsible for HiZELS public/world data releases
- Lunch talk Organiser at Leiden Observatory (2011/12)
- Postgraduate representative at the Institute for Astronomy, University of Edinburgh (2008/09)
- Organiser, project author or collaborator of 5 international conferences (abstract selection for 2 of them), including At the Edge of the Universe, in Sintra (2006)
- President of the Science Youth Association (AJC, Portugal); Director of magazine Ciência J (2005-07)

## SELECTED TALKS AND PRESENTATIONS (>70 talks, of which >35 Invited Seminars/talks)

Invited plenary talk, XIII SEA meeting, Salamanca, Spain	2018
Invited talk/review, ‘The early growth of supermassive black holes’, Sextens, Italy	2018
Invited talk, J-PAS meeting, Spain	2018
Discussion-lead, ‘The Interstellar Medium of High Redshift Galaxies’, Munich MIAPP, Germany	2018
Contributed talk, S3, EWASS2018, Liverpool, UK	2018
Invited seminar, IAC Tenerife, Spain	2017
Invited seminars, U. Nottingham; U. Hertfordshire, UK	2017
Invited seminars, U. Portsmouth; U. Cardiff, UK	2016
Invited seminar, U. Durham, UK	2016
Contributed talk, High-z session, NAM, Nottingham, UK	2016
Invited talk, ESO, Garching, Germany	2016
Invited talk, Spectroscopy through the ages, Leiden, NL	2016

Contributed talk, Escape of Lyman photons, Crete, Greece	2016
Invited seminar, U. Stockholm, Sweden	2016
Contributed talk, J-PAS meeting, Rio de Janeiro, Brasil	2016
Contributed talk, RAS High-z specialist meeting, London, UK	2016
Contributed talk, The re-ionisation epoch, Aspen, USA	2016
Invited seminar, U. Warwick, UK	2016
Contributed talk, RAS specialist meeting, London, UK	2016
Invited seminar, U. Geneva, Switzerland	2015
Invited talk, U. Yale, USA	2015
Contributed talk, CDFS: Galaxy evolution, Crete, Greece	2015
Contributed talk, South by High Redshift, Austin, USA	2015
Contributed talk, DEEP15, Sintra, PT	2015
Invited seminar, IA-University of Porto, Porto, PT	2015
Invited seminar, CEFCA, Teruel, Spain	2015
Invited talk, WISH workshop, LAM, Marseille	2014
Contributed talk, 2014 ENAA (Prize for Best ESO talk), Porto, PT	2014
Contributed talk, IAU S309: “Galaxies in 3D across the Universe”, Vienna, Austria	2014
Subaru Seminar, NAOJ, Hilo, Hawaii	2014
Contributed talk, “Galaxy Formation and Evolution from the Early Universe to Today”, Croatia	2014
Contributed talk, “Exploring the Universe in 3D with MUSE, KMOS and ALMA”, Garching, GE	2014
Invited Coffee Talk, ETH Zurich	2013
Contributed talk, Deconstructing galaxies, ESO Workshop, Santiago, Chile	2013
Seminar, Universidad Catolica de Chile, Santiago, Chile	2013
Cosmology Seminar, UC Davis, California, US	2013
Contributed Talk, Galaxy Formation and Evolution over 5 decades, U. Cambridge, UK	2013
Seminar, University of California - Riverside, California, US	2013
CFHT Science Talk, CFHT Waimea, Hawaii, US	2013
Lunch Talk, University of Durham, UK	2013
Invited Seminar, University of Nottingham, UK	2013
Discovery Talk, University of Leiden, The Netherlands	2013
Colloquium, University of Concepcion, Concepcion, Chile	2012
Contributed Talk, Stellar Populations across Cosmic Times, Subaru-IAP, Paris, France	2012
Caltech Astronomy Colloquium, Caltech, Pasadena, US	2012
Talk, UKIDSS 2012 Workshop, IfA, University of Edinburgh, UK	2012
Contributed Talk, Dutch National Astronomy Conference (NAC) 2012, The Netherlands	2012
Seminar, University of California - Riverside, US	2012
Colloquium, Institute for Astronomy, University of Hawaii, US	2012
Subaru Seminar, Subaru Telescope, Hilo, Hawaii, US	2012
Colloquium, CAAUL, Lisbon, PT	2012
Seminar, IAC Tenerife, Spain	2012
Galaxy Lunch talk, Leiden Observatory, The Netherlands	2012
Invited Talk, NOVA Network 1 meeting, Groningen, The Netherlands	2011
Contributed Talk, Galaxy Mergers in an Evolving Universe, Taiwan	2011
Invited Talk, ESO Vitacura, Santiago, Chile	2011
Seminar, CAAUP, Porto University, Portugal	2011
Seminar, TNG-INAF, La Palma, Spain	2011
Colloquium, Institute for Astronomy, University of Hawaii, US	2011
Seminar, Joint Astronomy Center, Hilo, Hawaii, US	2011
Science Talk, Gemini, Hilo, US	2010
Thesis Seminar, Institute for Astronomy, University of Edinburgh, UK	2010
Contributed Talk, Galaxy Evolution: Infrared & Sub-mm, China	2010

Contributed Talk, S2, JENAM 2010, University of Lisbon, Portugal	2010
arXiv presentation, California Institute of Technology, US	2010
FRieD Talk, Institute for Astronomy, Manoa, Hawaii, US	2010
Colloquium, Institute for Astronomy, Manoa, Hawaii, US	2010
Seminar, Joint Astronomy Center, Hilo, Hawaii, US	2010
Seminar, School of Physics & Astronomy, UoE, UK	2009
Seminar, FCUL, University of Lisbon, Portugal	2009
Contributed Talk, UKIRT@30: Royal Observatory, UK	2009
Contributed Talk, DEX Meeting, University of Durham, UK	2009
Seminar, CAAUL, University of Lisbon, Portugal	2009
Contributed Talk, Robert Cormack Meeting, University of Dundee, UK	2009
Contributed Talk, JENAM 2009, U. Hertfordshire, UK	2009
Invited Seminar, CENTRA, IST, UTL, Lisbon, Portugal	2008
Contributed Talk, JENAM 2008, University of Vienna, Austria	2008

## SELECTED SCIENCE AWARENESS, OUTREACH AND LECTURES

“The quest of our cosmic origins”, Beja, PT	2018
“CR7 and other bright distant galaxies”, Constanca, PT	2018
“Hunting for distant galaxies”, Native Explorers at Lancaster, UK	2018
“The quest for our cosmic origins”, Outreach without borders, Lancaster, UK	2018
“Time is precious”, ESHT’alks, Estoril, Portugal	2018
<b>Astrophysicists map the infant Universe in 3D and discover 4000 galaxies (EWASS18)</b>	2018
“Time travelling through the Universe”, South Cheshire Astronomical Society	2018
“The sky is not the limit, it is only the beginning in the quest for our origins”, Serralves, Porto	2017
“The light at the end of the cosmic dark ages”, Lancaster & Morecambe Astronomical Society	2017
Astronomers discover cosmic double whammy	2017
Galaxy Formation and Evolution: Public Talk, The Storey, Lancaster	2016
Press release: Distant galaxies glow bright in oxygen	2016
<b>CR7 is not alone: a team of super bright galaxies in the early Universe (RAS)</b>	2016
Press release: Study explains why galaxies stop creating stars	2016
<b>First stars (featuring the discovery of CR7) - 1 hour documentary, NHK, Japan</b>	2016
Lancaster University Master class	2016
Taster lectures, University of Lancaster	2016
<b>ESO top 10 discovery, ESO</b>	2015
<b>“Best Observational Evidence of First Generation Stars in the Universe”, ESO</b>	2015
“From the Big Bang to the Milky Way”; 700 students; 7 schools, Portugal	2015
<b>Press release: “Giant cosmic tsunami wakes up comatose galaxies”, RAS</b>	2015
“From the Big Bang to the Milky Way”; 200 people; Observatório Astronómico de Lisboa, Portugal	2015
“From the Big Bang to the Milky Way”; 100 students; Queluz, Portugal	2015
<b>Press release: “Cosmic web accelerates galaxy evolution”, UCR, IA, FCUL</b>	2014
<b>“Time-travelling in 3D” 15 Schools (&gt;1500 students) around Lisbon (Space week)</b>	2014
“Time-travelling and galaxy evolution: now in 3D!” Observatório Astronómico de Lisboa, Portugal	2014
“Darkness, Light, Galaxies and a Universe in Crisis”, Mem Martins, Sintra, PT	2013
“Darkness, Light, Galaxies and a Universe in Crisis”, Secondary School, Casquilhos, Barreiro, PT	2013
“Darkness, Light, Galaxies and a Universe in Crisis”, Ciencia Viva, Tavira, PT	2013
<b>Press release: “Cosmic GDP crashes 97% as star formation slumps”, RAS</b>	2012
Covered by e.g.: NYTimes, TIME, Wired, NBC, CBS and on more than 20 countries	2012
<b>Press release: “Time-Traveling with One Method”, Subaru Telescope</b>	2012
<b>Press release: “Mapping Galaxy Formation in Dual Mode”, Subaru Telescope</b>	2012
“All You Ever Wanted to Know About the Universe”, Secondary School, Casquilhos, PT	2012

“Once Upon a Universe”, Galloway Astronomy Centre, UK	2011
“The Universe seen by Ants with Telescopes”, Observatório Astronómico de Lisboa, Portugal	2011
“Science vs. Religion”, Secondary School, Santo André, Portugal	2011
“The Fascinating Life of Mr. Universe”, ROE Visitor Center, Edinburgh, UK	2011
“The Fabulous Life of Mr. Universe”, Imiloa Astronomy Center, Hilo, Hawaii, US	2011
- <b>Science outreach collaborator</b> at the Royal Observatory Visitor Center	2007-2011
“Being an Astronomer”, EB2+3 Quinta da Lomba, Portugal	2010
“From the Dark Ages to the Present-Day Universe” Observatório Astronómico de Lisboa, Portugal	2010
“Estimating Star-formation at high-z”, Institute for Astronomy, U. Edinburgh, UK	2010
“The Invisible Universe”, Secondary School, Casquilhos, Portugal	2010
“Searching for the furthest galaxies”, ROE Visitor Center, Edinburgh, UK	2010
Ask an Astronomer, ROE Visitor Center, Edinburgh, UK	2010
“The Invisible Universe”, ROE Visitor Center, Edinburgh, UK	2009
“The Physics of Micro-rockets & how to build them”, several Schools & Institutions, Portugal	2005-07
“Black Holes: The Universes Secret Keepers”, Observatório Astronómico de Lisboa, Portugal	2004
- <b>Science outreach writer</b> for several local and regional newspapers and magazines in Portugal	2002-2007

## PROGRAMMING AND DATA ANALYSIS EXPERIENCE

- Developed PffHiZELS, a data-reduction and analysis pipeline for large data-sets of near-IR imaging
- Data reduction and analysis experience in optical+near-IR narrow-, broad-band and spectroscopy (slit+MOS)
- Excellent experience in source extraction, catalogue production, multi-wavelength matching, SED fitting, stellar mass estimations, morphological classifications, clustering analysis and environmental studies
- Proficient in Python and script-writing; excellent experience with astronomical software (e.g. IRAF, SExtractor, Gaia, ds9, Topcat). Good knowledge of C and C++
- Experience in the use of all major operating systems (Mac OS, Linux, Windows, Solaris, DOS)

## OTHER SELECTED DISTINCTIONS, GRANTS, AWARDS & PRIZES

‘Barreiro Reconhecido’ distinction/medal in Science, Barreiro, Portugal	2018
Winner of the Science ‘Novos’ prize, recognising young people, Portugal	2016
‘Face of the Year 2015’ prize, Rostos magazine, Portugal	2016
Best research presentation, Physics Students Meeting (EUR 600, University of the Algarve)	2007
Academic Merit Scholarship - Faculty of Sciences (EUR 480; University of Lisbon)	2006-07
Chilean School of Astrophysics Scholarship (USD 700; Pontificia Universidad Católica de Chile)	2006
Ferreira de Castro Prize for Young Writers: Best Novel (EUR 700; Science Fiction)	2006
Santander Academic Merit Scholarship (EUR 400; University of Lisbon/Santander Bank)	2005-06
Young writer of 2005 award (Amarante, Portugal)	2005
Outstanding Performance in 1st year Scholarship (95%) (EUR 1,500; University of Lisbon)	2004-05
16th EU Contest for Young Scientists, representing Portugal (University College Dublin)	2004
Ciencia em Movimento award and scholarship (EUR 1,000, University of Lisbon)	2004
Astro-Cosmos award and scholarship (EUR 1,000, Lisbon’s Astronomical Observatory)	2004
National Contest for Young Scientists (EUR 750, Portugal, Fundacao da Juventude)	2003-04

**LANGUAGES: Portuguese, English, Spanish, French**

## REFEREED PUBLICATIONS (December 2018)

**Total: 104; as 1st(2nd) author: 18(40); Citations: 3703; h: 36**

- 1) “HiZELS: a high-redshift survey of H $\alpha$  emitters - II. The nature of star-forming galaxies at  $z = 0.84$ ”; **Sobral, David** ; Best, P. N.; Geach, J. E.; Smail, Ian; Kurk, J.; Cirasuolo, M.; Casali, M.; Ivison, R. J.; Coppin, K.; Dalton, G. B; **2009, MNRAS, 398, 75.**
- 2) “Bright Ly $\alpha$  emitters at  $z \sim 9$ : constraints on the LF from HizELS”; **Sobral, David** ; Best, P. N.; Geach, J. E.; Smail, Ian; Kurk, J.; Cirasuolo, M.; Casali, M.; Ivison, R. J.; Coppin, K.; Dalton, G. B.; **2009, MNRAS, 398, L68.**
- 3) “Obscured star formation at  $z = 0.84$  with HiZELS: the relationship between star formation rate and H $\alpha$  or ultraviolet dust extinction”; Garn, Timothy; **Sobral, David** ; Best, Philip N.; Geach, James E.; Smail, Ian; Cirasuolo, Michele; Dalton, Gavin B.; Dunlop, James S.; McLure, Ross J.; Farrah, Duncan; **2010, MNRAS, 402, 2017.**
- 4) “The clustering and evolution of H $\alpha$  emitters at  $z \sim 1$  from HiZELS”; **Sobral, David** ; Best, Philip N.; Geach, James E.; Smail, Ian; Cirasuolo, Michele; Garn, Timothy; Dalton, Gavin B.; Kurk, Jaron; **2010, MNRAS, 404, 1551.**
- 5) “The dependence of star formation activity on environment and stellar mass at  $z \sim 1$  from the HiZELS-H $\alpha$  survey”; **Sobral, David**; Best, Philip N.; Smail, Ian; Geach, James E.; Cirasuolo, Michele; Garn, Timothy; Dalton, Gavin B.; **2011, MNRAS, 411, 675.**
- 6) “An H $\alpha$  search for overdense regions at  $z=2.23$ ”; Matsuda, Y.; Smail, Ian; Geach, J. E.; Best, P. N.; **Sobral, David**; Tanaka, I.; Nakata, F.; Ohta, K.; Kurk, J.; Iwata, I.; **2011, MNRAS, 416, 2041.**
- 7) “Star formation at  $z=1.47$  from HiZELS: An H $\alpha$ + [OII] double-blind study”; **Sobral, David**; Best, Philip; Matsuda, Yuichi; Smail, Ian; Geach, James; Cirasuolo, Michele; **2012, MNRAS, 420, 1926.**
- 8) “The clustering of H $\alpha$  emitters at  $z=2.23$  from HiZELS”; Geach, James E.; **Sobral, David**; Hickox, R. C.; Wake, David; Smail, Ian; Best, Philip N.; Baugh, C. M; Stott, John P.; **2012, MNRAS 426, 679.**
- 9) “Mapping the Internal Dynamics and Metallicity Gradients in Star-forming Galaxies at  $z = 0.84 - 2.23$  from HiZELS”; Swinbank, A. M., **Sobral, David**; Smail, Ian; Geach, James E.; Best, Philip N.; McCarthy, I.; Crain, R.; Theuns, T.; **2012, MNRAS, 426, 935.**
- 10) “The Properties of Star-forming Interstellar Medium Between  $z = 0.8 - 2.2$  from HiZELS: Star-formation and Clump Scaling Laws in Gas rich, Turbulent disks”; Swinbank, A. M.; Smail, Ian; **Sobral, David**; Philip N.; Geach, James E.; Theuns, T. **2012, ApJ 760, 130.**
- 11) “HiZELS: The High Redshift Emission Line Survey with UKIRT”; Best, Philip; Smail, Ian; **Sobral, David**; Geach, Jim; Garn, Tim; Ivison, Rob; Kurk, Jaron; Dalton, Gavin; Cirasuolo, Michele; Casali, Mark **2013, ASSP 37, 235.**
- 12) “The HiZELS/UKIRT Large Survey for Bright Ly $\alpha$  Emitters at  $z \sim 9$ ”; **Sobral, David**; Best, Philip; Geach, Jim; Smail, Ian; Kurk, Jaron; Cirasuolo, Michele; Casali, Mark; Ivison, Rob; Coppin, Kristen; Dalton, Gavin **2013, ASSP 37, 251.**
- 13) “A large, multi-epoch H $\alpha$  survey at  $z=2.23, 1.47, 0.84$  &  $0.40$ : the 11 Gyr evolution of star-forming

galaxies from HiZELS”; **Sobral, David**; Smail, Ian; Best, Philip N.; Geach, James E.; Matsuda, Yuichi; Cirasuolo, Michele; **2013, MNRAS 428, 1128.**

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15) “The merger rates and sizes of galaxies across the peak epoch of star formation from the HiZELS survey”; Stott, John; **Sobral, David**; Smail, Ian; Bower, Richard; Best, Philip N.; Geach, James E.; **2013, MNRAS, 430, 1158.**

16) “Concurrent supermassive black hole and galaxy growth in a  $z = 2.23$  over density: results from a 100 ks CHANDRA observation of 2QZ Cluster 1004+00”; Lehmer, B. D.; Lucy, A. B.; Alexander, D. M.; Best, P. N.; Geach, J. E.; Harrison, C. M.; Hornschemeier, A. E.; Matsuda, Y.; Mullaney, J. R.; Smail, Ian; **Sobral, David**; Swinbank, A. M. **2013, ApJ, 765, 87.**

17) “On the evolution of the star formation rate versus stellar mass relation in galaxy cluster environments since  $z \sim 2$ ”; Koyama, Yusei; Smail, Ian; Kurk, Jaron; Geach, James; **Sobral, David**; et al. **2013, MNRAS, 434, 423.**

18) “Herschel reveals the obscured star formation in HiZELS  $H\alpha$  emitters at  $z = 1.47$ ”; Ibar, Edo; **Sobral, David**; Best, Philip; Ivison, Rob; Smail, Ian; et al. **2013, MNRAS, 434, 3218.**

19) “A fundamental metallicity relation for galaxies at  $z = 0.84 - 1.47$  from HiZELS”; Stott, John; **Sobral, David**; Bower, Richard; Smail, Ian; Best, Philip N.; Matsuda, Yuichi; Hayashi, Masao; Geach, James E.; Kodama, Tadayuki; **2013, MNRAS 436, 1130.**

20) “On-sky characterisation of the VISTA NB118 narrow-band filters at  $1.19 \mu\text{m}$ ”; Milvang-Jensen, Bo; et al. **inc. Sobral, David**; **2013, A&A 560, 27.**

21) “The dynamics of  $z = 0.8$   $H\alpha$  selected star-forming galaxies from KMOS/CF-HIZELS”; **Sobral, David**; Swinbank, Mark; Stott, John; Matthee, Jorryt; Bower, Richard; Smail, Ian; Best, Philip; Geach, Jim; Sharples, Ray; **2013, ApJ, 779, 139.**

22) “The stellar mass function of star-forming galaxies and the mass dependent-SFR function since  $z = 2.23$ ”; **Sobral, David**; Best, Philip; Smail, Ian; Mobasher, Bahram; Stott, John; Nisbet, David; **2014, MNRAS, 437, 3516.**

23) “The role of cluster mergers and travelling shocks in shaping the  $H\alpha$  luminosity function at  $z \sim 0.2$ : ‘Sausage and ‘Toothbrush clusters’”; Stroe, Andra; **Sobral, David**; Röttgering, Huub; Van Weeren; **2014, MNRAS, 438, 1377.**

24) “Mapping the large scale structure around a  $z = 1.46$  galaxy cluster in 3-D using two adjacent narrow-band filters”; Hayashi, Masao; Kodama, Tadayuki; Koyama, Yusei; Tadaki, Ken-ichi; Tanaka, Ichi; Shimakawa, Rhythm; Matsuda, Yuichi; **Sobral, David**; Best, Philip N.; Smail, Ian; **2014, MNRAS, 439, 2571.**

25) “A  $10 \text{ deg}^2$   $\text{Ly}\alpha$  survey at  $z = 8.8$  with spectroscopic follow-up: strong constraints on the LF and implications for other  $\text{Ly}\alpha$  surveys”; Matthee, Jorryt; **Sobral, David**; Swinbank, Mark; Smail, Ian; Best, Philip; Kim, Jae-Woo; Franx, Marijn; Milvang-Jensen, Bo; Fynbo, Johan; **2014, MNRAS, 440, 2375.**

26) “The highest-frequency detection of a radio relic: 16-GHz AMI observations of the Sausage cluster”;

Stroe, Andra; Rumsey, Clare; Harwood, Jeremy J.; van Weeren, Reinout J.; Rttgering, Huub J. A.; Saunders, Richard D. E.; **Sobral, David**; Perrott, Yvette C.; Schammel, Michel P.; **2014, MNRAS, 441, L41**

27) “Specific star formation rate as a driver of metallicity gradients within  $z \sim 1$  galaxies from KMOS-HiZELS”; Stott, John; **Sobral, David**; Swinbank, A. M.; Smail, Ian; Bower, Richard; Best, Philip N.; Sharples, Ray M.; Geach, James E.; Matthee, Jorryt; **2014, MNRAS, 443, 2695.**

28) “The relation between the cosmic web and star formation activity in galaxies at  $z \sim 1$ ”; Darvish, Behnam; **Sobral, David**; Mobasher, B.; Scoville, N. Z.; Best, P.; Sales, L. V.; Smail, I.; **2014, ApJ, 796, 51.**

29) “MC<sup>2</sup>: Constraining the dark matter distribution of the violent merging galaxy cluster CIZA J2242.8+5301: Piercing through the Milky Way”; Jee, M. James; Stroe, Andra; Dawson, William; Wittman, David; Hoekstra, Henk; Brggen, Marcus; Rttgering, Huub; **Sobral, David**; van Weeren, Reinout J.; **2015, ApJ, 802, 46.**

30) “The rise and fall of star-formation in  $z \sim 0.2$  merging galaxy clusters”; Stroe, Andra; **Sobral, David**; Dawson, William; Jee, M. James; Hoekstra, Henk; Wittman, David; van Weeren, Reinout J.; Brggen, Marcus; Rttgering, Huub J. A.; **2015, MNRAS, 450, 646.**

31) “MC<sup>2</sup>: Boosted AGN and star-formation activity in CIZA J2242.8+5301, a massive post-merger cluster at  $z = 0.19$ ”; **Sobral, David**; Stroe, Andra; Dawson, William A.; Wittman, David; Jee, M. James; Rottgering, Huub; van Weeren, Reinout J.; Bruggen, Marcus **2015, MNRAS, 450, 630.**

32) “MC<sup>2</sup>: Galaxy Imaging and Redshift Analysis of merging cluster CIZA J2242.8+5301”; Dawson, William A.; Jee, M. James; Stroe, Andra; Ng, Y. Karen; Golovich, Nathan; Wittman, David; **Sobral, David**; Brggen, M.; Rttgering, H. J. A.; van Weeren, R. J.; **2015, ApJ, 805, 143.**

33) “A comparative study of the density field determination: new insights into the evolution of galaxies with environment in COSMOS out to  $z \sim 3$ ”; Darvish, Behnam; Mobasher, Bahram; **Sobral, David**; Scoville, Nick; Aragon-Calvo, Miguel; **2015, ApJ, 805, 121.**

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35) “Identification of the brightest Ly $\alpha$  emitters at  $z = 6.6$ : implications for the evolution of the luminosity function in the re-ionisation era”; Matthee, Jorryt; **Sobral, David**; Santos, Sergio; Rottgering, Huub; Darvish, Behnam; Mobasher, Bahram; **2015, MNRAS, 451, 4919.**

36) “Evolution of the H $\beta$ + [OIII] and [OII] luminosity functions up to  $z \sim 5$ : implications for the star formation and AGN activity history of the Universe”; Khostovan, A.; **Sobral, David**; Mobasher, Bahram; Best, Philip N.; Smail, Ian; Stott, John P.; Hemmati, Shoubaneh; Nayyeri, Hooshang; **2015, MNRAS, 452, 3948.**

37) “Evidence for PopIII-like stellar populations in the most luminous Ly $\alpha$  emitters at the epoch of re-ionisation: spectroscopic confirmation”; **Sobral, David**; Matthee, Jorryt; Darvish, Behnam; Daniel Schaerer; Mobasher, Bahram; Rottgering, Huub; Santos, Sergio; Hemmati, Shoubaneh; **2015, ApJ, 808, 139.**

- 38) “On the nature of H $\alpha$  emitters at  $z \sim 2$  from the HiZELS survey: physical properties, Ly $\alpha$  escape fraction, and main sequence”; Oteo, Ivan; **Sobral, David** Ivison, Rob; Smail, Ian; Best, Philip; Cepa, J.; Perez-Garcia, A.; **2015, MNRAS, 452, 2018.**
- 39) “Neutral hydrogen gas, past and future star-formation in galaxies in and around the ‘Sausage’ merging galaxy cluster”; Stroe, Andra; Oosterloo, Tom; Rottgering, Huub; **Sobral, David**; van Weeren, Reinout; Dawson, William; **2015, MNRAS, 452, 2731.**
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- 42) “X-ray studies of the double radio relic cluster of galaxies CIZA J2242.8+5301 with *Suzaku*”; Akamatsu, H.; van Weeren, R.; Ogorean, G. A.; Kawahara, H.; Stroe, A.; **Sobral, David**; Hoeft, M.; Rottgering, H.; Bruggen, M.; Kaastra, J.; **2015, A&A, 582, 87.**
- 43) “Nebular and stellar dust extinction across the disk of emission-line galaxies on small (Kpc) scales”; Hemmati, Shoubaneh; Mobasher, Bahram; Darvish, Behnam; Nayyeri, Hooshang; **Sobral, David**; Miller, Sarah; **2015, ApJ, 814, 46.**
- 44) “Spectroscopic Study of Star-forming Galaxies in Filaments and the Field at  $z \sim 0.5$ : Evidence for Environmental Dependence of Electron Density”; Darvish, Behnam; Mobasher, Bahram; **Sobral, David**; Hemmati, Shoubaneh; Nayyeri, Hooshang; Shivaei, Irene; **2015, ApJ, 814, 84.**
- 45) “The most luminous H $\alpha$  emitters at  $z \sim 0.8 - 2.23$  from HiZELS: evolution of AGN and star-forming galaxies”; **Sobral, David**; Kohn, Saul; Best, Philip; Smail, Ian; Harrison, Chris; Stott, John; Calhau, Joao; Matthee, Jorryt; **2016, MNRAS, 457, 1739.**
- 46) “The KMOS Redshift One Spectroscopic Survey (KROSS): Dynamical properties, gas and dark matter fractions of typical  $z \sim 1$  star forming galaxies”; Stott, John; Swinbank, Mark A.; Johnson, Helen; Tiley, Alfie; Magdis, Georgios; Bower, Richard, Bunker, Andrew J.; Bureau, Martin; Harrison, Chris; Jarvis, Matt; Smail, Ian; **Sobral, David**; Best, Philip; Cirasuolo, Michele; **2016, MNRAS, 457, 1888.**
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- 52) “Effects of local environment and stellar mass on galaxy quenching out to  $z \sim 3$ ”; Darvish, Behnam; Mobasher, Bahram; **Sobral, David**; Rettura, Alessandro; Faisst, Andreas; Capak, Peter; **2016, ApJ, 825, 113.**
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- 59) “The growth of typical star-forming galaxies and their super massive black holes across cosmic time”; Calhau, Joao; **Sobral, David**; Stroe, Andra; Best, Philip; Smail, Ian; Lehmer, Bret; Harrison, Chris; Thomson, Alasdair, **2017, MNRAS, 464, 303.**
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- 61) “The CALYMHA survey: Ly $\alpha$  luminosity function and global escape of Ly $\alpha$  photons at  $z = 2.23$ ”; **Sobral, David**; Matthee, Jorjyt; Best, Philip; Stroe, Andra; Rottgering, Huub; Oteo, Ivan; Morabito, Leah; Paulino-Afonso, Ana; **2017, MNRAS, 466, 1242.**
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- 63) “Angular momentum evolution of galaxies over the past 10 Gyrs: A MUSE and KMOS dynamical

survey of 400 star-forming galaxies from  $z = 0.3 - 1.7$ "; Swinbank, A.M.; Harrison, C.M.; Trayford, J.; Schaller, M.; Smail, I.; Schaye, J.; Theuns, T.; Alexander, D.M.; Bacon, R.; Bower, R.G.; Contini, T.; Crain, R.A., de Breuck, C.; Decarli, R.; Epinat, B.; Fumagalli, M.; Furlong, M.; Galametz, A.; Johnson, H.L.; Lagos, C.; Richard, J.; Vernet, J.; Sharples, R.M.; **Sobral, David**; Stott, J.P.; **2017, MNRAS, 467, 3140.**

64) "Cosmic Web of Galaxies in the COSMOS Field: public catalog and the quenching of centrals and satellites"; Darvish, Behnam; Mobasher, Bahram; Martin, Chris; **Sobral, David**; Scoville, Nick; Stroe, Andra; Hemmati, Shoubaneh; Nayyeri, Hooshang; **2017, ApJ, 837, 16.**

65) "The KMOS Redshift One Spectroscopic Survey (KROSS): rotational velocities and angular momentum of  $z \sim 1$ "; Harrison, C.; Johnson, H.; Swinbank, A. M.; Stott, J.; Bower, R. G.; Smail, Ian; Tiley, A. L.; Bunker, A.; Cirasuolo, M.; **Sobral, David**; Sharples, R. M.; Best, P.; Bureau, M.; Jarvis, M. J.; Magdis, G; **2017, MNRAS, 467, 1965.**

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74) "The interstellar medium in [OIII]-selected star-forming galaxies at  $z \sim 3.2$ "; Suzuki, T.; Kodama, T.; Onodera, M.; Shimakawa, R.; Hayashi, M.; Tadaki, K.; Koyama, Y.; Tanaka, I.; **Sobral, David**; Smail, I.; Best, P.; Khostovan, A.; Minowa, Y.; Minowa, J.; Yamamoto, M.; **2017, ApJ, 849, 39.**

- 75) “ALMA reveals metals yet no dust within multiple components in CR7”; Matthee, J.; **Sobral, David**; Boone, F.; Rottgering, H.; Schaerer, D.; Girard, M.; Pallottini, A.; Vallini, L.; Ferrara, A.; Darvish, B.; Mobasher, B.; **2017, ApJ, 851, 145.**
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