

# Brooke D. Simmons

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## Professional Summary

- Principal scientific interests: galaxy evolution, supermassive black holes, black hole-galaxy co-evolution
- Expert on parametric image decomposition and quantified visual morphologies
- Expert in citizen science as a facility for data analysis and discovery
- Active Collaborations: [COSMOS](#), [Zooniverse](#), [Galaxy Zoo](#) (Deputy Project Scientist), [Galaxy Zoo Bar Lengths](#) (Principal Investigator), [CANDELS](#)

## Employment

December 2015 - present Einstein Fellow, UC San Diego

June 2012 - December 2015 Henry Skynner Fellow & Postdoctoral Researcher, University of Oxford

## Education

2001-2007; 2011-2012 Ph.D., Astronomy, Yale University — Advisor: C. Megan Urry  
*Black Hole Growth and Host Galaxy Co-Evolution Over 8 Billion Years of Cosmic Time*

2007-2011 On leave (family reasons)

2003 M.Phil., Astronomy, Yale University

2002 M.S., Astronomy, Yale University

2001 A.B., Astrophysical Sciences, Princeton University (honors)

## Awards

January 2015 Einstein Fellowship

January 2014 Henry Skynner Junior Research Fellowship, Balliol College, Oxford

October 2012 Junior Research Fellowship, Worcester College, Oxford

June 2012 James Martin Fellowship, Oxford Martin School, Oxford

## Invited Talks

Dr. Simmons is regularly invited to give seminars and colloquia. Examples of other recent invited talks:

*Apr 2016* “Building your citizen science project with the Zooniverse”, ETH meets CA

*Aug 2015* “Making the internet work for you (in research)”, Bone Research Society

*Jul 2015* “Building an academic career”, talk & panel, RAS National Astronomy Meeting

*Feb 2015* “The Scientific Impact of Galaxy Zoo”, AAAS Meeting, San Jose

## Grants Awarded

*Feb 2015* ESA: Crowdsourcing For Observations From Satellites, €174,505 (Simmons co-PI from Oxford, share: €99,935)

*Sep 2011* HST-AR-12638.01-A: AGN Hosts at  $z \sim 2$ , US\$100,000

*Sep 2005* HST-AR-10689.01-A: Host Galaxies and SEDs of Luminous AGN, US\$100,000

## Telescope Proposals Awarded

*as PI*

*2016-2017* HST Cycle 24 SNAP: “Secular Black Hole Growth and Feedback in Merger-Free Galaxies” (121 targets)

*2016B* Lick: Kast spectra of bulgeless quasar candidates (3 nights)

*2014B* DCT: Ultra-deep imaging of bulgeless galaxies (3 nights)

*2014A* INT: IDS long-slit spectra of bulgeless quasar candidates (3 nights)

*2013A* Gemini-S: GMOS long-slit spectroscopy of bulgeless AGN host galaxies (7.5 hr, Band A)

*2013A* WIYN: NIR & Optical imaging of bulgeless AGN host galaxies (6 nights)

## Refereed Publications

Note: candidate name & students' names in bold

### Publications as First Author

6. "Galaxy Zoo: Quantitative Visual Morphological Classifications for 48,000 galaxies from CANDELS"  
**B. D. Simmons**, C. Lintott, K. W. Willett, K. L. Masters, *et al.* (46 authors), 2016, submitted
5. "Galaxy Zoo: CANDELS Barred Disks and Bar Fractions"  
**B. D. Simmons**, T. Melvin, C. Lintott, K. L. Masters, *et al.* (42 authors), 2014, *MNRAS*, 445, 3466
4. "Galaxy Zoo: Bulgeless Galaxies With Growing Black Holes"  
**B. D. Simmons**, *et al.* (**A. Han**: 5<sup>th</sup> of 11 authors), 2013, *MNRAS*, 429, 2199
3. "Moderate-luminosity Growing Black Holes from  $1.25 < z < 2.7$ : Varied Accretion in Disk-Dominated Hosts"  
**B. D. Simmons**, C. M. Urry, K. Schawinski, C. Cardamone, and E. Glikman, 2012, *ApJ*, 761, 75
2. "Obscured GOODS AGN and Their Host Galaxies at  $z < 1.25$ : The Slow Black Hole Growth Phase"  
**B. D. Simmons**, J. Van Dуйne, C. M. Urry, E. Treister, A. M. Koekemoer, N. A. Grogan, and the GOODS Team, 2011, *ApJ*, 734, 121
1. "The Accuracy of Morphological Decomposition of Active Galactic Nucleus Host Galaxies"  
**B. D. Simmons** and C. M. Urry, 2008, *ApJ*, 683, 644

### Publications as Major Contributing Author

18. "Galaxy Zoo: Morphological Classifications for 120,000 Galaxies in HST Legacy Imaging"  
K. W. Willett, *et al.* (**Simmons**: 7<sup>th</sup> of 21 authors), 2016, *MNRAS*, submitted
17. "Galaxy Zoo: Evidence for rapid, recent quenching across a population of AGN host galaxies"  
R. J. Smethurst, C. Lintott, **B. D. Simmons**, K. Schawinski, *et al.* (11 authors), 2016, *MNRAS*, submitted
16. "Assessing Data Quality In Citizen Science"  
M. Kosmala, A. Wiggins, A. Swanson, **B. D. Simmons**, 2016, *Front. Ecol. Environ.*, accepted
15. "Standing out from the crowd: relative contribution and crowding out in online crowdsourcing"  
E. Y. Oh, J. Cox, **B. D. Simmons**, G. Graham, *et al.* (7 authors), 2016, *Econ. Lett.*, submitted
14. "Science Learning via Participation in Online Citizen Science"  
K. L. Masters, E. Y. Oh, J. Cox, **B. D. Simmons**, C. Lintott, *et al.* (8 authors), 2016, *JCOM*, 1503, A07
13. "Major Mergers Host the Most Luminous Red Quasars at  $z \sim 2$ : A *Hubble Space Telescope* WFC3/IR Study"  
E. Glikman, **B. D. Simmons**, M. Mailly, K. Schawinski, C. M. Urry, M. Lacy, 2015, *ApJ*, 806, 218
12. "How is success defined and measured in online citizen science? A case study of Zooniverse projects"  
J. Cox, E-Y. Oh, **B. D. Simmons**, C. J. Lintott, K. L. Masters, *et al.* (8 authors), 2015, *CISE*, 17, 28
11. "The dependence of the star formation-stellar mass relation on spiral disk morphology"  
K. W. Willett, K. Schawinski, **B. D. Simmons**, K. L. Masters, *et al.* (13 authors), 2015, *MNRAS*, 449, 820
10. "Galaxy Zoo: Evidence For Diverse Star Formation Histories Through The Green Valley"  
R. J. Smethurst, C. J. Lintott, **B. D. Simmons**, K. Schawinski, *et al.* (13 authors), 2015, *MNRAS*, 450, 435
9. "The Green Valley is a Red Herring: Galaxy Zoo reveals two evolutionary pathways towards quenching of star formation in early- and late-type galaxies"  
K. Schawinski, C. M. Urry, **B. D. Simmons**, L. Fortson, *et al.* (15 authors), 2014, *MNRAS*, 440, 889
8. "Galaxy Zoo 2: detailed morphological classifications for 304,122 galaxies from the Sloan Digital Sky Survey"  
K. W. Willett, *et al.* (**Simmons**: 5<sup>th</sup> of 18 authors), 2013, *MNRAS*, 435, 2835
7. "Major Galaxy Mergers Only Trigger the Most Luminous AGN"  
E. Treister, K. Schawinski, C. M. Urry, and **B. D. Simmons**, 2012, *ApJL*, 758, 39
6. "Heavily Obscured Quasar Host Galaxies at  $z \sim 2$  are Disks, Not Major Mergers"  
K. Schawinski, **B. D. Simmons**, C. M. Urry, E. Treister, and E. Glikman, 2012, *MNRAS Letters*, 425, 61
5. "Bolometric Luminosities and Eddington Ratios of X-ray Selected AGN in the XMM-COSMOS Survey"  
E. Lusso, A. Comastri, **B. D. Simmons**, M. Mignoli, *et al.* (27 authors), 2012, *MNRAS*, 425, 623
4. "Evidence for Three Accreting Black Holes in a Galaxy at  $z \sim 1.35$ : A Snapshot of Recently Formed Black Hole Seeds?"  
K. Schawinski, C. M. Urry, E. Treister, **B. D. Simmons**, P. Natarajan, and E. Glikman, 2011, *ApJL*, 743, 37
3. "HST WFC3/IR Observations of AGN Hosts at  $z \sim 2$ : Supermassive Black Holes Grow in Disk Galaxies"  
K. Schawinski, E. Treister, C. M. Urry, C. N. Cardamone, **B. D. Simmons**, and S. K. Yi, 2011, *ApJL*, 727, 31
2. "Do Moderate-Luminosity Active Galactic Nuclei Suppress Star Formation?"  
K. Schawinski, *et al.* (**B. D. Simmons** and **B. Kushkuley**: 2<sup>nd</sup> and 7<sup>th</sup> of 7 authors), 2009, *ApJL*, 692, 19

1. "Active Galactic Nucleus Host Galaxy Morphologies in COSMOS"  
J. M. Gabor, C. D. Impey, K. Jahnke, **B. D. Simmons**, *et al.* (17 authors), 2009, *ApJ*, 691, 705

#### *Team Publications as Contributing Author*

13. "Galaxy Zoo: comparing the demographics of spiral arm number and a new method for correcting redshift bias"  
R. Hart, *et al.* (Simmons: 10<sup>th</sup> of 11 authors), 2016, *MNRAS*, submitted
12. "Faint COSMOS AGN at  $z \sim 3.3$  - I. Black Hole Properties and Constraints on Early Black Hole Growth"  
B. Trakhtenbrot, *et al.* (Simmons: 10<sup>th</sup> of 10 authors), 2016, *ApJ*, submitted
11. "Radio Galaxy Zoo: host galaxies and radio morphologies derived from visual inspection"  
J. Banfield, *et al.* (Simmons: 7<sup>th</sup> of 36 authors), 2015, *MNRAS*, 453, 2326
10. "An over-massive black hole in a typical star forming galaxy, 2 billion years after the Big Bang"  
B. Trakhtenbrot, *et al.* (Simmons: 9<sup>th</sup> of 9 authors), 2015, *Science*, 349, 168
9. "Stellar Populations of Barred Quiescent Galaxies"  
E. Cheung, *et al.* (Simmons: 12<sup>th</sup> of 13 authors), 2015, *ApJ*, 807, 36
8. "Galaxy Zoo: the effect of bar-driven fueling on the presence of an active galactic nucleus in disk galaxies"  
M. A. Galloway, *et al.* (Simmons: 10<sup>th</sup> of 10 authors), 2015, *MNRAS*, 448, 3442
7. "Misalignment between cold gas and stellar components in early-type galaxies"  
O. I. Wong, *et al.* (Simmons: 6<sup>th</sup> of 8 authors), 2015, *MNRAS Letters*, 447, 3311
6. "Galaxy Zoo: Are bars responsible for the feeding of active galactic nuclei at  $0.2 < z < 1.0$ ?"  
E. Cheung, *et al.* (Simmons: 20<sup>th</sup> of 22 authors), 2014, *MNRAS*, 447, 510
5. "Galaxy Zoo: Evolution of the bar fraction over the last eight billion years from HST-COSMOS"  
T. Melvin, *et al.* (Simmons: 5<sup>th</sup> of 14 authors), 2014, *MNRAS*, 438, 2882
4. "Galaxy Zoo and ALFALFA: Atomic Gas and the Regulation of Star Formation in Barred Disc Galaxies"  
K. L. Masters, *et al.* (Simmons: 7<sup>th</sup> of 10 authors), 2012, *MNRAS*, 424, 2180
3. "Chandra Observations of Galaxy Zoo Mergers: Frequency of Binary Active Nuclei in Massive Mergers"  
S. H. Teng, *et al.* (Simmons: 11<sup>th</sup> of 12 authors), 2012, *ApJ*, 753, 165
2. "The Infrared Light Curve of SN 2011fe in M101 and the Distance to M101"  
T. Matheson, *et al.* (Simmons: 39<sup>th</sup> of 46 authors), 2012, *ApJ*, 754, 19
1. "AGN Host Galaxies at  $z \sim 0.4$ -1.3: Bulge-dominated and Lacking Merger-AGN Connection"  
N. A. Grogan, *et al.* (Simmons: 15<sup>th</sup> of 16 authors), 2005, *ApJL*, 627, 97

## Teaching

Oct. 2012 - Dec. 2015	Tutor, 4th-year Astrophysics (University of Oxford)
Jan. 2008 – Dec. 2010	Self-employed as professional tutor in math, science, reading/writing
Sept. 2001 - Jan. 2005	Teaching Fellow (Yale University). Courses: "Frontiers & Controversies in Astrophysics"; "Life in the Universe"; "Stars and Planets".
Jan. - May 2001	Teaching Assistant (Princeton University): "The Universe"

## Students Supervised

Dr. Simmons has supervised 3 M.Phys and 6 summer students. Students supervised include R. Cochrane, A. Griffin, A. Han, T. Hutchinson, B. Kushkuley, A. Schooneveld.

## Public Dialogue

Dr Simmons regularly gives invited public talks and contributes to blogs and social media.

#### *Select Media Coverage*

<i>Nature</i> , " <a href="#">Citizen scientists aid Ecuador earthquake relief</a> "	3 <sup>rd</sup> May, 2016
<i>Nature</i> , " <a href="#">Crisis Mappers Turn To Citizen Scientists</a> "	19 <sup>th</sup> Nov, 2014
<i>Sky &amp; Telescope</i> , " <a href="#">Citizen Scientists Probe Early Galaxies</a> "	29 <sup>th</sup> Sep, 2014

## Interdisciplinary Roles

*Principal Investigator*, The Planetary Response Network

Primary partners: Planet Labs, European Space Agency, Qatar Computing Research Institute