

# Curriculum Vitae

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STEVEN W. ALLEN

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## EMPLOYMENT HISTORY

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- 09/15–present : Professor, Department of Physics, Stanford University, and of Particle Physics and Astrophysics, SLAC National Accelerator Laboratory.
- 09/08–09/15 : Associate Professor, Department of Physics, Stanford University, and of Particle Physics and Astrophysics, SLAC National Accelerator Laboratory.
- 01/05–09/08 : Assistant Professor, Department of Physics, Stanford University, and of Particle Physics and Astrophysics, SLAC National Accelerator Laboratory.
- 10/99–01/05 : Royal Society University Research Fellow, University of Cambridge.
- 10/95–10/99 : Postdoctoral Research Associate, University of Cambridge.
- 10/95–10/98 : Charles & Katherine Darwin Research Fellow, University of Cambridge.
- 11/93–11/95 : Postdoctoral Research Fellow, United Kingdom Particle Physics and Astronomy Research Council (PPARC, formerly SERC).

## ACADEMIC HISTORY

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- 1990-1995 : **Ph. D. in Astronomy**, University of Cambridge.  
Advisor: Professor A.C. Fabian FRS, OBE.
- 1987-1990 : **B. Sc. (Hons) in Physics, First Class, Associate of the Royal College of Science**,  
Department of Physics, Imperial College, University of London.

## TEACHING AT STANFORD

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- 2014-2018 : **Physics 100**: Introduction to Observational Astrophysics (Undergraduate).
- 2016-2017 : **Physics 301**: Introduction to Observational Astrophysics (Graduate).
- 2011-2014 : **Physics 16**: Cosmic Horizons (Undergraduate).
- 2009-2012 : **Physics 100**: Introduction to Observational Astrophysics (Undergraduate).
- 2010-2011 : **Physics 301**: Introduction to Observational Astrophysics (Graduate).
- 2009-2010 : **Physics 59**: Current Research Topics (Undergraduate).
- 2005-2009 : **Physics 63,64**: Electricity, Magnetism and Waves (Undergraduate).
- 2005-2006 : **Physics 463**: Experimental Cosmology (Graduate).

## POSTDOCTORAL SCHOLARS AND RESEARCH ASSOCIATES ---

- 2016-present : **Daniel Wilkins (Einstein Fellow)** (with R. Blandford).
- 2015-present : **Daniel Gruen (Einstein Fellow)**
- 2015-present : **Georgiana Ogrean (Hubble Fellow)**
- 2015-present : **Adam Mantz**
- 2014-present : **Ashley King (Einstein Fellow)**
- 2012-present : **Irina Zhuravleva**
- 2012-present : **Rebecca Canning (Einstein Fellow)**
  
- 2008-2016 : **Norbert Werner (Einstein Fellow)**
- 2007-2015 : **Anja von der Linden (Brahe Fellow)**
- 2012-2014 : **Julie Hlavacek-Larrondo (Einstein Fellow)**
- 2009-2013 : **Aurora Simionescu (Einstein Fellow)**
- 2010-2011 : **Tim Schrabback** (with R. Blandford).
- 2006-2010 : **David Rapetti**
- 2000-2003 : **Robert Schmidt** (University of Cambridge, with A. Fabian).

## GRADUATE STUDENTS ---

- 2017-present : **Stanislv Fort**
- 2016-present : **Emil Noordeh**
- 2015-present : **Anna Ogorzalek**
- 2013-present : **Adam Wright**
  
- 2011-2016 : **Ondrej Urban**, Stanford University. ‘New Insights into Galaxy Cluster Astrophysics Using the Suzaku Satellite’.
- 2009-2013 : **Steven Ehlert**, Stanford University. ‘The Co-evolution of Galaxies and their Environments in Massive Galaxy Clusters’.
- 2008-2012 : **Patrick Kelly**, Stanford University, ‘Cosmic Stellar Explosions and Galaxy Cluster Weak Gravitational Lensing’ (with D. Burke).
- 2007-2012 : **Douglas Applegate**, Stanford University, ‘Methods and Measurements of Accurate Galaxy Cluster Weak-Lensing Masses’.
- 2006-2010 : **Evan Million**, Stanford University, ‘Astrophysics of the intracluster medium in X-ray bright galaxy clusters’.
- 2005-2009 : **Adam Mantz**, Stanford University, ‘Observations of the growth of X-ray luminous galaxy clusters: cosmological and astrophysical implications’.
- 2004-2006 : **David Rapetti**, University of Barcelona, ‘Probing dark energy with X-ray galaxy clusters, supernovae and the cosmic microwave background’ (with P. Lapuente).

## PROFESSIONAL SERVICE

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- 2016-present : Member, X-ray Surveyor Science and Technology Definition Team
- 2016-present : Member, Athena Wide Field Imager Proto-consortium
- 2016-present : Member, CMB-S4 Collaboration
- 2015-present : DOE Point of Contact, LSST Dark Energy Science Collaboration
- 2014-present : Co-lead, Clusters and LSS Working Group, Athena Collaboration
- 2014-present : Member, Dark Energy Survey
- 2013-present : Member, South Pole Telescope Collaboration
- 2010-present : Member, Euclid Science Consortium.
- 2010-2017 : Co-lead, Cosmology, Hitomi Science Working Group
- 2012-2017 : Co-lead, Clusters Working Group, LSST Dark Energy Science Collaboration
- 2014-2015 : Conference SOC: ‘Kahnfest’, Stanford, USA.
- 2014 : Conference SOC: ‘Inhomogeneities in the Intracluster Plasma’, Stanford, USA.
- 2014 : Conference SOC: ‘Planck 2014: The microwave sky in temperature and polarization’, Ferrara, Italy.
- 2014 : Conference SOC: ‘Cosmology with Galaxy Clusters in the XXI Century’, Madrid, Spain.
- 2012-2013 : Conference SOC: ‘KIPAC@10’, Stanford, USA.
- 2012 : Editor, eROSITA Science Book
- 2011-2012 : NASA High Energy Astrophysics Division Nominating Committee
- 2008-2011 : Science Definition Team, International X-ray Observatory
- 2008-2011 : Chandra Users’ Committee
- 2011 : Einstein Fellowship Selection Committee
- 2010-2011 : Conference SOC: ‘DEUS: Current and Future Challenges of the Dark and Early Universes’, Copenhagen, Denmark.
- 2010-2011 : Conference SOC: ‘Structure in Clusters and Groups of Galaxies in the Chandra Era’, Boston, USA.
- 2010 : Conference SOC: ‘Experimental and Theoretical Challenges to Probing Dark Energy’, Stanford, USA.
- 2008-2009 : Conference SOC: ‘Petrosianfest 2009’, Stanford, USA.
- 2004-2008 : Constellation-X Facility Science Team
- 2004-2008 : Constellation-X Galaxies and Galaxy Clusters Science Panel
- 2007-2008 : Chair, Constellation-X Large Scale Structure panel
- 2007-2008 : Conference SOC: ‘Putting Gravity to Work, Cambridge, UK.
- 2007-2008 : Conference SOC: ‘X-ray Universe 2008’, Granada, Spain.
- 2007-2008 : Conference SOC: ‘Bob Wagoner Invitational’, Stanford, USA.
- 2007 : Invited Lecturer: National Research Council Beyond Einstein Assessment Committee
- 2000-2007 : Chandra Peer Review Panel: Cycles 2,3,6,9
- 2003-2004 : Conference SOC: ‘Clusters of Galaxies: New Insights from XMM-Newton, Chandra and INTEGRAL’, Paris, France.
- 2002 : External examiner: Ph.D. thesis of Ben Ritchie, University of Sussex

I am a reviewer for leading astrophysics journals including *Monthly Notices of the Royal Astronomical Society*, *Astronomy and Astrophysics* and *The Astrophysical Journal*. I have reviewed numerous grant proposals for NASA, the United Kingdom Science and Technology Facilities Council, and occasional grants for other science foundations.

## DEPARTMENTAL/UNIVERSITY SERVICE

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### *Stanford University/SLAC*

- 2014-present : Chair, LSST Science Department, SLAC
- 2014-present : Chair, LSST Steering Committee, SLAC
- 2012-present : Graduate Admissions, Stanford Physics
- 2012-present : Graduate Advisor, Stanford Physics
- 2005-present : Ph.D. thesis committees: Harry Desmond (2017), Richard Anantua (2016), Yao-Yuan Mao (2016), Rachel Reddick (2013), Alex Drlica-Wagner (2013), Stephen Osbourne (2013), Keith Bechtol (2012), Peter Behroozi (2012), Hao-Yi Wu (2011), Ji-hoon Kim (2011), Jane Dai (2011), Yvonne Edmonds (2011), Kyle Watters (2010), Ed Wu (2009), Chen Zheng (2009), Mustafa Amin (2008)
- 2013-2015 : Co-chair, KIPAC Postdoc and Student Affairs Committee
- 2009-2014 : Head of Department, Observational and Experimental Cosmology, SLAC
- 2012-2014 : KIPAC Executive Committee
- 2013-2014 : Tenure evaluation committee: Chao-Lin Kuo, Stanford Physics & SLAC
- 2013-2014 : Bunyan Lecture Committee
- 2012-2013 : Chair, Graduate Student Recruitment and Orientation, Stanford Physics
- 2012-2013 : Graduate Advisor, Stanford Physics Dept.
- 2011-2012 : Professorial Reappointment Committee: Ariel Schwartzman, SLAC
- 2011-2012 : Graduate Qualifying Exam, Stanford Physics
- 2010-2011 : Graduate Admissions, Stanford Physics
- 2009-2011 : Bunyan Lecture Committee
- 2009-2010 : Graduate Advisor, Stanford Physics
- 2005-2009 : Co-chair, KIPAC Research Associate Selection Committee
- 2007-2009 : Undergraduate Studies Committee, Stanford Physics
- 2008-2009 : Space Committee, Stanford Physics
- 2008-2009 : Search Committee, Director of Particle Physics and Astrophysics, SLAC
- 2008-2009 : Staff Promotion Review Committee, SLAC
- 2005-2009 : Head of Department, KIPAC-Physics, SLAC.
- 2005-2008 : KIPAC Executive Committee
- 2007-2008 : Endowed Postdoctoral Fellowships Committee, Stanford Physics Dept.
- 2007-2008 : Graduate Advisor, Stanford Physics
- 2006-2008 : Panofsky Fellowship Selection Committee, SLAC
- 2005-2007 : KIPAC Transition Committee.
- 2005-2007 : Space Committee, Stanford Physics
- 2004-2006 : Graduate admissions, Stanford Physics

### *Cambridge University, UK.*

- 1996-2004 : Health and Safety Committee, Institute of Astronomy, Cambridge
- 1996-1999 : Chair, inter-disciplinary Science Group, Darwin College, Cambridge
- 1996-1999 : Education and Research Committee, Darwin College, Cambridge
- 1996-1999 : Governing Body, Darwin College, Cambridge

## POST-DEGREE HONORS AND AWARDS

### PRIZES AND PRIZE FELLOWSHIPS ---

- 2012-2015 : Sophie and Tycho Brahe Visiting Professorship, University of Copenhagen
- 2008 : Bruno Rossi Prize, American Astronomical Society.
- 1999 : Royal Society University Research Fellowship (merit award 2001)
- 1995 : Charles & Katherine Darwin Research Fellowship, University of Cambridge
- 1993 : P.P.A.R.C. (formerly S.E.R.C) Postdoctoral Research Fellowship

The **Sophie and Tycho Brahe Visiting Professorship** is associated with the Dark Cosmology Centre at the Niels Bohr Institute, University of Copenhagen.

The **Bruno Rossi Prize** is awarded annually by the High Energy Astrophysics Division of the American Astronomical Society for “Significant contributions to High Energy Astrophysics, with particular emphasis on recent original work”. I was co-recipient of the 2008 award with J. Patrick Henry, Maxim Markevitch and Alexey Vikhlinin.

**Royal Society University Research Fellowships** are among the most prestigious prize fellowships available for untenured scientists in the United Kingdom. They provide full salary support, indirect costs and research funds for 5 years in the first instance, renewable up to a maximum of 10 years. The Royal Society offers approximately 30 such awards annually across all scientific disciplines, of which one or two might be in the field of astrophysics.

The **Charles and Katherine Darwin Research Fellowship** is awarded annually by Darwin College, Cambridge, United Kingdom. The fellowship is intended for an outstanding researcher who is completing, or has recently completed, their Ph.D. Degree. The competition is unrestricted in terms of subject area.

**Particle Physics and Astronomy Research Council (PPARC) Postdoctoral Research Fellowships** are independent prize fellowships that allow junior researchers, who have held their Ph.D. for two years or less at the time of appointment, to devote themselves to independent study for a period of up to three years at a chosen UK institution. PPARC makes up to twelve awards annually across astronomy and particle physics.

### SCIENTIFIC ASSOCIATION MEMBERSHIPS ---

- 2006-present : Member of the American Astronomical Society (AAS).
- 2005-present : Kavli Institute for Particle Astrophysics and Cosmology.
- 2005-present : Associate, Dark Cosmology Center, Copenhagen.
- 1995-present : Fellow of the Royal Astronomical Society.
- 1993-present : Member of the United Kingdom Institute of Physics (M.Inst.P., C.Phys.).
- 1990-present : Royal College of Science Association.

## GRANT AWARDS AS PRINCIPAL INVESTIGATOR \_\_\_\_\_

This list covers major observatory and other U.S. funded grant awards for which I was/am principal investigator (science and/or administrative/budget). The exposure times associated with observatory awards are given conventionally, e.g. in units of kiloseconds for X-ray satellites and orbits for the Hubble Space Telescope. Following Stanford University practice, dollar amounts for the awards are not shown.

### NASA CHANDRA X-RAY OBSERVATORY:

- **Cycle 19 (2017):** ‘Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146’ (1 target, 2Ms).
- **Cycle 19 (2017):** ‘What is Sourcing Gas Motions in the Core of NGC 1316?’ (1 target, 210ks).
- **Cycle 19 (2017):** ‘Enabling Precision Cosmology with Optically Selected Galaxy Clusters’ (20 targets, 288ks).
- **Cycle 19 (2017):** ‘Witnessing the Formation of a Radio Halo’ (1 target, 200ks).
- **Cycle 19 (2017):** ‘Building a complete sample of  $z > 1$  XXL galaxy clusters’ (7 targets, 152ks).
- **Cycle 18 (2016):** ‘Turbulent Heating in Radio-mode AGN Feedback’ (Archival Study).
- **Cycle 17 (2015):** ‘Probing the ICM on mean free path scales’ (1 target, 1Ms).
- **Cycle 17 (2015):** ‘Precision Cosmology with Less Luminous Galaxy Clusters’ (Archival Study).
- **Cycle 17 (2015):** ‘Pinning Down the Origin of an Extreme Radio Phoenix’ (1 target, 78ks).
- **Cycle 17 (2015):** ‘Following the Ultra-Fast Winds in the Stellar-Mass Black Hole, IGR 17091-3624’ (1 target, 160ks).
- **Cycle 16 (2014):** ‘Perseus: A new, low-redshift anchor for cluster cosmology’ (1 target, 145ks).
- **Cycle 16 (2014):** ‘Uncovering the True Nature of Warm-Absorbing Winds: The Power of the Fe XXII Doublet’. **Large Program (1 target, 700ks).**
- **Cycle 16 (2014):** ‘Following the Ultra-Fast Winds in the Stellar-Mass Black Hole, IGR 17091-3624’ (1 target, 80ks).
- **Cycle 16 (2014):** ‘Chandra observations of the massive galaxy cluster MACS J1447.4+0827 at  $z=0.3755$ ’ (1 target, 70ks).
- **Cycle 16 (2014):** ‘An X-ray view of peculiar radio tails lacking optical counterparts in Abell 585’ (1 target, 20ks).

- **Cycle 16 (2014):** ‘Establishing the origin of hot gas in early type galaxies’  
(**Archival Study**).
- **Cycle 15 (2013):** ‘A deep study of ram-pressure stripping, metal ridges, and AGN feedback in the Ophiuchus Cluster’ (**1 target, 250ks**).
- **Cycle 15 (2013):** ‘Nature of gas density fluctuations in the Perseus Cluster: AGN feedback, turbulence and mergers’ (**Archival study**).
- **Cycle 14 (2012):** ‘Resolving the nearest cold front in the sky: the cleanest experimental tool to study detailed ICM physics’. **Large Program (1 target, 500ks)**.
- **Cycle 14 (2012):** ‘Probing galaxy formation with fast rotating elliptical galaxies’ (**5 targets, 150ks**).
- **Cycle 14 (2012):** ‘Tracing a merger from start to finish in Abell 85’ (**2 targets, 160ks**).
- **Cycle 13 (2011):** ‘A Chandra study of the large-scale shock front in Abell 2219’ (**1 target, 150ks**).
- **Cycle 13 (2011):** ‘Imaging gas clumping in the outskirts of nearby clusters of galaxies’ (**4 targets, 150ks**).
- **Cycle 13 (2011):** ‘Examining incredible structure in the core of the Coma cluster’ **Large Program (4 targets, 500ks)**.
- **Cycle 13 (2011):** ‘Diffusive Shock Acceleration in a Double Radio Relic Cluster’ (**1 target, 200ks**).
- **Cycle 12 (2010):** ‘Extreme Mergers from the Massive Cluster Survey’ (**1 target, 130ks**).
- **Cycle 12 (2010):** ‘Constraining gravity with the growth of galaxy clusters’ (**theory proposal**).
- **Cycle 11 (2009):** ‘Anatomy of a merger: the curious case of MACS J0417.5-1154’ (**1 target, 80ks**).
- **Cycle 11 (2009):** ‘Study of the interaction between the puzzling AGN and the hot gas in the cooling core of Sersic 159-03’ (**1 target, 100ks**).
- **Cycle 10 (2008):** ‘Bondi accretion and jet power in a complete sample of elliptical galaxies’ (**3 targets, 120ks total**).
- **Cycle 10 (2008):** ‘Mapping Dark Matter in the Merging Cluster MACS0025.4-1222’ (**1 target, 115ks**).
- **Cycle 9 (2007):** ‘Probing Dark Energy with Relaxed Galaxy Clusters’ **Large Program (13 targets, 465ks total)**.
- **Cycle 9 (2007):** ‘Bubble heating in Extreme Cooling Clusters’ (**1 target, 100ks**).

- **Cycle 8 (2006):** ‘The relation between accretion rate and jet power in elliptical galaxies’ (Archival study).
- **Cycle 8 (2006):** ‘The cluster core of Abell 2204: AGN interaction and cold fronts’ (1 target, 80ks).
- **Cycle 7 (2005):** ‘Powerful Radio Sources in Galaxy Clusters’ (1 target, 60ks).
- **Cycle 6 (2004):** ‘Probing dark energy using the X-ray gas mass fraction in relaxed galaxy clusters’. **Director’s Discretionary Time: (12 targets, 400ks total).**
- **Cycle 5 (2003):** ‘A detailed Chandra study of the luminous lensing cluster MS2137.3-2353’ (1 target, 100ks).
- **Cycle 5 (2003):** ‘A Chandra Study of the relaxed lensing cluster Abell 2537’ (1 target, 40ks).
- **Cycle 4 (2002):** ‘Cosmological constraints from the X-ray gas mass fraction in the most luminous relaxed clusters’ (1 target, 120ks).
- **Cycle 4 (2002):** ‘A detailed study of the luminous lensing cluster Abell 2390’ (1 target, 100ks).
- **Cycle 3 (2001):** ‘Chandra and HST observations of the brightest, relaxed cluster lenses’ (2 targets, 70ks total).
- **Cycle 2 (2000):** ‘Chandra and HST observations of the brightest cluster lenses’ (1 target, 10ks).
- **Cycle 1 (1998):** ‘Cluster gravitational lenses and the impact of cooling flows’ (1 target, 40ks).

NASA XMM-NEWTON:

- **Cycle 16 (2016):** ‘A Definitive Test for Evolution in the Metallicity of the Intracluster Medium’ (1 target, 575ks).
- **Cycle 13 (2013):** ‘Cooling and heating in rotating hot X-ray emitting atmospheres’ (1 target, 56ks).
- **Cycle 10 (2010):** ‘The deep impact of AGN feedback in Messier 84’ (1 target, 130ks).
- **Cycle 10 (2010):** ‘Beyond the virial radius of the X-ray brightest cluster’ (1 target, 16ks).
- **Cycle 9 (2009):** ‘New Cosmological Constraints from X-ray Clusters’ **Large Program (45 targets, 390ks total).**
- **Cycle 8 (2008):** ‘A First Look at the Merging Cluster Abell 2254 with XMM-Newton’ (1 target, 60ks).
- **Cycle 6 (2006):** ‘Constraining Dark Matter with Merging Galaxy Clusters’ (2 targets, 180ks total).



- **Cycle 5 (2005):** ‘Enrichment and cooling in the Centaurus cluster’  
(1 target, 140ks).
- **Cycle 5 (2005):** ‘Determining the heat balance in groups and clusters’  
(3 targets, 70ks total).
- **Cycle 2 (2002):** ‘XMM-Newton observations of the brightest relaxed cluster lenses’  
(3 targets, 95ks total).
- **Cycle 1 (1999):** ‘Cluster lensing and the impact of cooling flows’  
(1 target, 20ks).

#### NASA HUBBLE SPACE TELESCOPE (HST):

- **Cycle 21 (2013):** ‘Riding the wake of a cluster merger: star formation, filaments and turbulence’ (1 target, 4 orbits).
- **Cycle 21 (2013):** ‘An XMM-Newton+HST study of the likely most luminous  $z \geq 0.9$  galaxy cluster’ (1 target, 4 orbits).
- **Cycle 19 (2011):** ‘Dark Interactions: New Constraints on Self Interacting Dark Matter’  
(Archival study).
- **Cycle 19 (2011):** ‘Extreme Mergers from the Massive Cluster Survey’  
(1 target, 4 orbits).
- **Cycle 18 (2009):** ‘Anatomy of a merger: the curious case of MACS J0417.5-1154’  
(1 target, 4 orbits).
- **Cycle 16 (2007):** ‘Two new ‘bullets’ for MOND: revealing the properties of dark matter in massive merging clusters’ (2 targets, 24 orbits total).
- **Cycle 11 (2002):** ‘Chandra and HST observations of the brightest, relaxed cluster lenses’  
(3 targets, 3 orbits total).
- **Cycle 9 (2000):** ‘Chandra and HST observations of the brightest cluster lenses’  
(1 target, 9 orbits).

#### NASA SUZAKU:

- **Cycle 6 (2011):** ‘To beyond the virial radius of the X-ray brightest cluster’  
**Key Project (28 targets, 520ks total).**
- **Cycle 5 (2010):** ‘To beyond the virial radius of the X-ray brightest cluster’  
**Key Project (14 targets, 260ks total).**
- **Cycle 4 (2009):** ‘To beyond the virial radius of the X-ray brightest cluster in the sky’  
(14 targets, 260ks total).

#### NASA HERSCHEL SPACE OBSERVATORY:

- **Cycle 1 (2010):** ‘Understanding the physics of cold gas in the nearby proxies of distant cooling cores’ (10 targets, 24 hrs total).

NASA EUCLID:

- **FY2013-current:** ‘Constraining Dark Energy and Modified Gravity with Euclid’ (sub-award from JPL, PI Rhodes).

NASA SOFIA:

- **Cyle 3 (2014):** ‘The role of cold gas in the evolution of nearby giant elliptical galaxies’ (6 targets, 5 hrs total).

NASA ASTROPHYSICS DATA ANALYSIS PROGRAM (ADAP):

- **FY 2016-2018:** ‘The Triggering and Evolution of AGN in Cluster Fields’ (15-ADAP14-TBD).
- **FY 2015-2017:** ‘Enhancing Galaxy Cluster Cosmology’ (14-ADAP14-0044).
- **FY 2013-2015:** ‘Witnessing the growth of the nearest galaxy cluster’ (12-ADAP12-0115).
- **FY 2012-2014:** ‘The Outskirts of Galaxy Clusters’ (11-ADAP11-0030).

NASA HUBBLE FELLOWSHIPS (AS OFFICIAL SPONSOR):

- **Georgiana Ogreaan (2015-2017)**, Stanford University.

NASA EINSTEIN FELLOWSHIPS (AS OFFICIAL SPONSOR):

- **Daniel Gruen (2015-2018)**, SLAC National Accelerator Laboratory.
- **Rebecca Canning (2015-2018)**, Stanford University.
- **Ashley King (2014-2017)**, Stanford University.
- **Julie Hlavecek-Larrondo (2012-2014)**, Stanford University.
- **Aurora Simionescu (2009-2012)**, Stanford University.
- **Norbert Werner (2008-2011)**, Stanford University.

NASA HARDWARE DEVELOPMENT:

- **FY 2016-2019: US Contribution to the Athena Wide Field Imager.** Collaboration with Penn State University, Massachusetts Institute of Technology and Smithsonian Astrophysical Observatory.

## SELECTED INVITED LECTURES AND REVIEW TALKS (SINCE 2009) \_\_\_\_\_

1. *“X-rays and the galaxy cluster landscape for astrophysics and cosmology”*.  
Invited talk at ‘From Chandra to Lynx: Taking the Sharpest X-ray Vision Fainter and Farther’, international conference, Harvard University, MA. August 2017.
2. *“Cluster Cosmology for the Next Decade”*.  
Invited talk at ‘Galaxy clusters: physics laboratories and cosmological probes’, international conference, University of Cambridge, UK. December 2016.
3. *“Cluster Cosmology for the Next Decade”*.  
Invited talk at ‘Chandra Science for the Next Decade’, international conference, Harvard University, MA. August 2016.
4. *“Cosmology with Cluster Counts”*.  
Invited talk at ‘CMB@50’, international conference, Princeton, NJ. June 2015.
5. *“Cluster Cosmology Overview”*.  
Invited talk at ‘Future Directions in Galaxy Cluster Surveys’, international conference, Paris, France. June 2014.
6. *“Galaxy Clusters and the Dark Universe”*.  
Colloquium, Harvard University, USA. November 2013.
7. *“Galaxy Cluster Cosmology”*.  
Invited talk at DARK Cosmology Institute, Copenhagen, Denmark. August 2013.
8. *“Galaxy Cluster Cosmology”*.  
Invited talk at ‘Tracing Cosmic Evolution with Clusters of Galaxies’, international conference, Sesto, Italy. July 2013.
9. *“Galaxy Cluster Cosmology”*.  
Invited talk at ‘Cosmo Probes 2013’, international conference, Lausanne, Switzerland. June 2013.
10. *“Cluster Distance Measurements”*.  
Invited talk at ‘Cosmic Frontier Workshop’, SLAC National Accelerator Laboratory, USA. March 2013.
11. *“Realistic Planning for Astronomical Research”*.  
Invited talk at ‘DARK OUT’, Lisbon, Portugal. November 2012.
12. *“X-ray Cluster Cosmology”*.  
Invited talk at Japanese Physical Society, Kyoto, Japan. September 2012.
13. *“Cluster Cosmology”*.  
Invited talk at International Astronomical Union XXVIII General Assembly, Beijing, China. August 2012.
14. *“Galaxy Clusters and the Dark Universe”*.  
Colloquium, SLAC National Accelerator Laboratory, USA. November 2011.

15. *“Galaxy Clusters and the Dark Universe”*.  
Colloquium, Herzberg Institute, Victoria, Canada. November 2011.
16. *“Galaxy Clusters and the Dark Universe”*.  
Colloquium, The Ohio State University, USA. October 2011.
17. *“Galaxy Clusters and the Dark Universe”*.  
Invited talk at ‘The Dark Universe’, international conference, University of Heidelberg, Germany. October 2011.
18. *“Dark Energy Constraints from Observations of Galaxy Clusters”*.  
Invited talk at ‘DEUS: Current and Future Challenges of the Dark and Early Universes’, international conference, Niels Bohr Institute, Denmark. August 2011.
19. *“Cosmological Constraints from Observations of Galaxy Clusters”*.  
Two invited lectures at ‘The History of the Universe’, SLAC Summer Institute, SLAC National Accelerator Laboratory, USA. August 2011.
20. *“Cosmological Constraints from the Cluster Baryon Fraction”*.  
Invited talk at ‘Monsters, Inc.: Astrophysics and Cosmology with Galaxy Clusters’, international conference, Kavli Institute for Theoretical Physics, USA. March 2011.
21. *“Cosmology with ASTRO-H”*.  
Invited talk at ASTRO-H conference, Stanford, USA. August 2010.
22. *“Perseus - to the virial radius and beyond”*.  
Invited talk, Insititute of Space and Astronautical Science, Sagamihara, Japan. February 2010.
23. *“Suzaku observations of the Perseus Cluster - to beyond the virial radius”*.  
Invited talk at ‘Clusters of Galaxies as Cosmic Laboratories’, international conference, Massachusetts Institute of Technology, MA, USA. January 2010.
24. *“New cosmological constraints from X-ray clusters”*.  
Colloquium, Kavli Institute for Cosmological Physics, University of Chicago, IL, USA. October 2009.
25. *“X-ray cluster cosmology”*.  
Invited talk at ‘Recent Advances in Cosmology’, international conference, Potsdam, Germany. September 2009.
26. *“X-ray cluster cosmology”*.  
Invited talk at ‘Perspectives of High Energy Astrophysics’, MPE Symposium, Garching, Germany. July 2009.
27. *“Galaxy Clusters in X-rays: Physics and Cosmology”*.  
Rossi Prize Lecture, 213th American Astronomical Society meeting, Long Beach, CA, USA. January 2009.

## PRESS RELEASES

1. “NASA’s Suzaku Finds Common Chemical Composition at Largest Cosmic Scales” (NASA). Simionescu A., *Werner N., Urban O., Allen S.W.* et al., October 2015.
2. “NASA’s Chandra Observatory Identifies Impact of Cosmic Chaos on Star Birth” (NASA). *Zhuravleva, I., Churazov E., Schekochihin A., Allen S.W.* et al., October 2014.
3. “Bullying black holes force galaxies to stay red and dead” (ESA). *Werner N., Oonk R., Sun M., Nulsen P.E.J. Allen S.W.* et al., February 2014.
4. “RX J1532.9+3021: Extreme Power of Black Hole Revealed” (NASA image release). *Hlavacek-Larrondo J., Allen S.W.* et al., January 2014.
5. “Suzaku Study Points to Early Cosmic Seeding”(NASA/JAXA). *Werner N., Urban O., Simionescu A., Allen S.W.*, October 2013.
6. “Suzaku Shows Clearest Picture Yet of Perseus Galaxy Cluster” (NASA). *Simionescu A., Allen S.W., Mantz A.B., et al.*, March 2011.
7. “Galactic Super-volcano in Action” (NASA). *Werner N., Simionescu A., Million E.T., Allen S.W.* et al., August 2010.
8. “Einstein’s Theory Fights off Challengers” (NASA). *Rapetti D., Mantz A.B., Schmidt F., Allen S.W., Hu W., Vikhlinin A.*, April 2010.
9. “A Clash of Clusters Provides New Clue to Dark Matter” (NASA). *Bradac, M., Allen S.W.* et al., August 2008.
10. “NASA’s Chandra Finds Black Holes Are ‘Green’ ” (NASA Space Science Update). **Allen S.W.**, Reynolds C.S. NASA media teleconference, April 2006.
11. “Hot Studies of Dark Energy” (NASA Space Science Update). **Allen S.W.**, Fabian A.C. Televised press conference, NASA HQ, Washington DC, USA, May 2004.
12. “Chandra ‘Hears’ a Black Hole” (NASA Space Science Update). *Fabian A.C., Allen, S.W.* Televised press conference, NASA HQ, Washington DC, USA, September 2003.
13. “Astronomers Take the Measure of Dark Matter in the Universe” (NASA). **Allen, S.W.** Held in Washington DC, USA, September 2001.
14. “Chandra Catches Cannibal Galaxy in the Act” (NASA). *Fabian A.C., Sanders J.S., Ettori S., Taylor G.B., Allen S.W.* et al., Held in Huntsville, AL, USA, June 2000.

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## PUBLICATIONS IN REFEREED JOURNALS

This list summarizes, in chronological order, my publications in peer-reviewed astrophysics journals. Citation statistics are drawn from the NASA Astrophysics Data System. An expanded publication list, including articles in books, unrefereed journals and conference proceedings can be found at <http://www.stanford.edu/group/xoc/swa/publications.html>.

### NOTE REGARDING AUTHOR LISTS

In most fields of astrophysics, including those relevant here, the individual making the most significant contribution to a paper is listed first; the next most significant contributor is listed second, and so on. For long author lists, beyond the first few authors and where relative contributions become difficult to gauge, alphabetical order is occasionally employed.

### NOTE REGARDING MENTORED GRADUATE STUDENTS AND POSTDOCS

The names of graduate students and postdoctoral scholars for whom I was supervisor at the time the work was written are listed in *italic* font.

### JOURNAL ABBREVIATIONS

MNRAS: *Monthly Notices of the Royal Astronomical Society*

ApJ: *Astrophysical Journal*

ApJL: *Astrophysical Journal Letters*

A&A: *Astronomy and Astrophysics*

ARA&A: *Annual Review of Astronomy and Astrophysics*

APh: *Astroparticle Physics*

Where page numbers are preceded by an ‘L’ (for ‘letters’), this indicates that the publication was included in the section of the main journal appropriate for short, urgent publications.

**PUBLICATION STATISTICS:** 164 published papers + 10 submitted/in press.  
(NASA ADS: > 15000 citations,  $h = 69$ ; Google Scholar: > 18000 citations,  $h = 73$ ).

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