

## Sarbani Basu, Ph.D.

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### Education:

1986 B.Sc. in Physics, Women's Christian College, Chennai, India  
1988 M.Sc. in Physics, University of Poona, Pune, India  
1993 Ph.D. in Physics, Tata Institute of Fundamental Research, Mumbai, India

### Professional Preparation:

1993-1994 Post Doctoral Researcher, Queen Mary & Westfield College, London, U.K.  
1994-1997 Post Doctoral Researcher, Theoretical Astrophysics Center, Univ. of Aarhus, Denmark  
1997-1999 Member, Institute for Advance Study, Princeton, NJ, USA

### Academic positions held:

2016- Chair, Department of Astronomy, Yale University  
2011-2016 Director of Graduate Admissions, Department of Astronomy, Yale University  
2005- Professor, Department of Astronomy, Yale University  
2004-2005 Associate Professor, Department of Astronomy, Yale University  
2002-2007 Director of Graduate Studies, Department of Astronomy, Yale University  
2000-2004 Assistant Professor, Department of Astronomy, Yale University

### Honors and Awards:

- 2018: The George Ellery Hale Prize of the Solar Physics Division of the American Astronomical Society
- 2015: Fellow of the American Association for the Advancement of Science
- 2004: NSF Career grant
- 2002: Hellman Family Faculty Fellowship, Yale University
- 1996: The M.K. Vainu Bappu Gold Medal of the Astronomical Society of India.

### Research Interests:

- Helioseismology: Helioseismic study of the structure and dynamics of the Sun; using the Sun as a laboratory to test the physics therein; refine techniques of helioseismic inversion; study of solar-cycle related changes in the Sun;
- Solar and Stellar structure: modeling solar structure; study of solar variability; physical properties of stellar interiors.
- Asteroseismology: Studying the properties of pulsating stars; developing techniques of using data to infer properties of stars.

### Publications:

1 full-length book  
≈ 250 peer reviewed publications.  
>17000 citations as per the Astrophysics Data System (ADS), H index = 73  
> 23000 citations as per Google Scholar, H index = 84

Publications can be accessed from [http://bit.ly/sarbani\\_basu\\_papers](http://bit.ly/sarbani_basu_papers)

### **Membership of professional organizations:**

1. International Astronomical Union
2. American Astronomical Society
3. American Association for the Advancement of Science
4. American Geophysical Union
5. Astronomical Society of India

### **Managerial/ supervisory/ advisory positions**

2018- present	Deputy Chair, Board of Directors, Association of Universities for Research in Astronomy (AURA)
2017- present	Member, Editorial Board, Solar Physics
2016- present	Chair, Department of Astronomy, Yale University
2016-2016	Chair, Mikulsky Archive for Space Telescopes (MAST) Users' Group
2015- present	Member, Board of the TESS Asteroseismic Science Consortium
2014- present	Member, Board of Directors, Association of Universities for Research in Astronomy (AURA)
2014- present	AURA Member Representative for Yale University
2014	Member, Visiting Committee to evaluate laboratory astrophysics funded by the French Commissariat à l'Energie Atomique (CEA)
2014	Member, Committee to evaluate performance of the Director of the Space Telescope Science Institute
2013-2015	Member, Mikulsky Archive for Space Telescopes (MAST) Users' Group
2012-2013	National Solar Observatory's Committee of Visitors
2011	Member, Member, AURA committee for evaluating National Solar Observatory's leadership
2009- present	Member, Steering Committee, <i>Kepler</i> Asteroseismic Science Consortium
2008	Committee of Visitors, ATM division of the National Science Foundation
2006-2009	Management and Operations Working Group (MOWG) of NASA's Living With a Star program
2005-2011	Member, National Solar Observatory Users' Committee
2003-2010	Member, Scientific Advisory Committee of the Global Oscillation Network Group

### **Service at Yale:**

2001-2002	Director of Graduate Admissions, Department of Astronomy
2002-2007	Director of Graduate Studies, Department of Astronomy
2004-2004	Member, Committee to select Prize Teaching Fellows
2005-2006	Member, Yale College Steering Committee
2005-2006	Member, <i>ad hoc</i> Committee on International Students
2005-2006	Member, Executive Committee Graduate School
2009-2010	Member, Social Sciences Tenure Committee
2009-2011	Member, Yale College's Sexual Harassment Grievance Board
2009-present	Member, University Advisory Committee of the Yale-New Haven Teachers' Institute
2010-2012	Member, Graduate School Committee on Regulations and Discipline
2012-2013	Member, Information & Technology Services Research Technologies Committee
2013-2014	Member, Steering Committee, Yale College
2014-present	Member Representative for Yale to AURA
2014-2016	Member, Physical Sciences and Engineering Tenure and Advisory Committee
2016-present	Chair, Astronomy Department

**Funding history:** A successful record of obtaining external funding, including an NSF CAREER Award.

1. 2000-2004: PI NASA grant NAG5-10912 (\$ 157,358), “Probing Cycle-Related Changes in the Outer Layers of the Ring-Diagram Analysis.”
2. 2002-2005: PI NSF Grant, ATM 026130 (\$ 347,314), “Solar Variability: Modeling and Helioseismic Studies.”
3. 2006-2012: Co-I, NASA project “Helioseismic and Magnetic Imager for Solar Dynamics Observatory,” (\$ 357,490 for Co-I).
4. 2004-2009: P.I., NSF Career grant (\$597,442), “CAREER: Solar Variability in the Classroom and in Research.”
5. 2006-2009: P.I., NASA grant NNG06GD13G (\$ 193,931) “Probing the structure and dynamics of the outer layers of the Sun”,
6. 2008-2011: P.I., NSF grant ATM 0737770 (\$ 399,383) “Helioseismology and Solar Magnetic Fields: Studying the forward problem”
7. 2009-2012: P.I., NASA ATFP grant NNX09AJ53G (\$ 369,534) “Modeling convection in stars: from 3D simulations to 1D approximations”
8. 2010-2013: P.I., NASA grant NNX10AE60G (\$ 373,404) “The structure and dynamics of the solar interior during the minimum of cycle 24”
9. 2011-2014: P.I. NASA Education and Public Outreach grant NNX11AH34G (\$310, 820) “ Solar Cycle Investigations: NASA Science Exploration for Middle School Students and Teachers”
10. 2011-2014: P.I. NSF grant AST-1105930 (\$ 345,486) “Journey to the Centre of Stars: Testing Stellar Evolution with Asteroseismology”
11. 2013-2016: P.I. NASA grant NNX13AE70G (\$ 346,017) “Charting the properties of stars in the Kepler field to study the Galaxy”
12. 2015-2018: P.I. NSF grant AST-1514676 (\$ 433,565) “Decreasing Systematic Errors in Estimates of Stellar Ages”
13. 2016-2019: P.I. NASA grant NNX16AI096 (\$372,191) “The Giants in The Kepler Fields”
14. 2016-2017: US P.I. for NASA K2 guest observer grant NNS16AE65G (\$18,000) “Asteroseismology of solar-type stars with K2 (K2GO2)”
15. 2017-2018: US P.I. for NASA K2 guest observer grant NNX17AL49G (\$40,000) “Asteroseismology of solar-type stars with K2 (K2GO4)”
16. 2018-2019: US P.I. for NASA K2 guest observer grant 80NSSC18K0363 (\$35,000) “Asteroseismology of solar-type stars with K2 (K2GO5)”
17. 2018-2020: P.I. NASA TESS Guest Investigation grant (\$70,000) “Investigating the evolution of Helium” (awaiting funds)

**Peer-review activities:**

1. Referee for Astrophysical Journal, Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society, Reviews of Modern Physics, Solar Physics, Nature, Physical Review Letters, Europhysics Letters, National Academy of Sciences
2. NASA review panels
3. NSF review panel
4. Mail-in reviewer for NASA proposals
5. Mail-in reviewer for NSF proposals
6. Reviewer for United Kingdom Particle Physics and Astrophysics Research council’s proposals 2004
7. Reviewer for the Austrian Science Fund (FWF)
8. Reviewer for Canadian Space Agency
9. Reviewer for German Science Foundation
10. Reviewer for the Belgian Science Foundation

### Scientific Organizing Committees of Meetings:

1. Member, Scientific Organizing Committee, SOHO 6/GONG 98 Workshop, Boston, June 1998
2. Member, Scientific Organizing Committee, SOHO 12/GONG 02 Workshop, Big Bear, October 2002
3. Member, Scientific Organizing Committee, GONG2006/SOHO 18/Helas 1 meeting “Beyond the Spherical Sun,” Sheffield, U.K., August 2006
4. Member, Scientific Organizing Committee, SOHO 17 meeting “10 Years of SOHO and Beyond”, Sicily, May 2006.
5. Chair, Scientific and Local Organizing Committees, GONG 2004 -SOHO 14 meeting, New Haven, CT, USA, July 2004
6. Member, Scientific Organizing Committee, 2010 Sagan Summer Workshop
7. Member, Scientific Organizing Committee, *Kepler* Asteroseismic Science Consortium meetings 2011 (Boulder, USA), 2012 (Hungary), 2013 (Sydney, Australia)
8. Member, Scientific Organizing Committee, “Fifty Years of Seismology of the Sun and Stars,” Tucson, AZ, May 2013
9. Member, Scientific Organizing Committee, “New advances in stellar physics: from microscopic to macroscopic processes”, Roscoff, France, May 2013
10. Member, Scientific Organizing Committee, 19<sup>th</sup> Cambridge Cool Stars Meeting, Uppsala, Sweden, 2016
11. Member, Scientific Organizing Committee, TESS Asteroseismic Science Consortium meetings 2016 (Terceira, Portugal), 2017 (Birmingham, UK)
12. Member, Scientific Organizing Committee, 20<sup>th</sup> Cambridge Cool Stars Meeting, Boston, 2018

### Colloquia given:

1. *Spatial and Temporal Evolution of Gas and Heavy Elements in the Galaxy*, Indian Institute of Science, Bangalore, India, January, 1993
2. *Multiplicity Corrected Initial Mass Function of the Solar Neighbourhood*, Indian Institute for Astrophysics, Bangalore, India, January, 1993
3. *Spatial and temporal evolution of gas and heavy elements in the Galaxy*, Queen Mary and Westfield College, London, U.K., September 1993
4. *The Seismic Sun*, Institute for Advanced Study, Princeton, NJ, January 1997
5. *The Seismic Sun*, Rutgers University, New Brunswick NJ, November 1997
6. *The Seismic Sun*, Yale University, New Haven CT, January 1999
7. *Testing Stellar Equations of State Using Helioseismology*, Tata Institute of Fundamental Research, Mumbai India, January 1999
8. *Peering into the Sun*, Carnegie Institute of Washington, Washington DC, October 1999
9. *Peering into the Sun*, Massachusetts Institute of Technology, Boston MA, November 1999
10. *Peering into the Sun*, Ohio State University, Columbus OH, March 2000
11. *Probing the heart of the Sun*, Wesleyan University, Middletown CT, November 2000
12. *Temporal variations of solar structure and dynamics*, Tata Institute of Fundamental Research, Mumbai India, March 2001
13. *Helioseismology and the Solar Neutrino Problem*, Yale Center for Astronomy and Astrophysics, February 2002
14. *Solar Cycle Related Changes in the Sun*, University of Arizona, April 2002
15. *What has Helioseismology Revealed about the Solar Cycle?* Tata Institute of Fundamental Research, Mumbai India, December 2002
16. *Peering into the Sun*, University of Southern California, Los Angeles, February 2003
17. *Helioseismology and Solar Variability*, Carnegie Institute of Washington, Washington DC, May 2003

18. *What have we learned about the solar cycle using helioseismology?* Rutgers University, New Brunswick NJ, October 2003
19. *Some recent results in helio- and asteroseismology*, University of Rochester, Rochester, N.Y., April 2005
20. *Some recent results in helio- and asteroseismology*, University of Massachusetts, Amherst, M.A., May 2005
21. *Seismology of the Sun and Stars*, Dartmouth College, Hanover N.H., March 2006
22. *Trouble in Paradise: A tale of solar abundances*, Yale University, New Haven, CT, September 2006
23. *Journey to the Centre of the Sun*, Columbia University, New York, NY, October 2006
24. *Trouble in paradise: A tale of solar abundances*, California Institute of Technology, Pasadena, CA, November 2006
25. *So what's the matter with solar abundances?* Institute for Advanced Study, Princeton, N.J., March 2008
26. *Peering into the heart of the Sun: What have we learned during solar cycle 23?* Beijing Normal University, Beijing, China, October 2008
27. *The problem with solar abundances: Do we have the solution yet?* National Astronomical Observatories Headquarters, Beijing, China, October 2008
28. *What have we learned during solar cycle 23?* Yunnan Observatory, Kunming, China, October 2008
29. *Journeying to the centre of the Sun*, University of Montreal, Montreal, Canada, November 2008
30. *The Seismic Study of the Sun and Other Stars*, Max Planck Institute for Solar System Physics, Germany, May 2009
31. *Interpreting Helio- and Asteroseismic Data*, University of Birmingham, Birmingham, U.K., June 2009
32. *The Journey to the Centre of Stars with Kepler*, Wesleyan University, Middletown, CT, November 2011
33. *A Journey to the Centre of Stars*, 'Science Today' Lecture, State University of New York, Oswego, NY, February 2012
34. *What the Sun has taught us about basic properties of matter?* Plasma Physics Laboratory, Princeton University, Princeton, NJ March 2012
35. *How Asteroseismology is Challenging Stellar Astrophysics?* Institute for Advanced Study, Princeton, NJ, December 2013
36. *Oh that Wretched Surface Term!* Max-Planck Institute for Solar System Research, Göttingen, Germany, March 2014
37. *What We Saw in the Deep Solar Minimum and Beyond?* Max-Planck Institute for Solar System Research, Göttingen, Germany, March 2014
38. *Asteroseismology: Methods and Issues*, Beijing Normal University, Beijing, China, September 2014
39. *Asteroseismology: Some Results*, Beijing Normal University, Beijing, China, September 2014
40. *Solar Cycle Related Changes in the Sun*, Beijing Normal University, Beijing, China, September 2014
41. *Journeying to the centre of stars*, New York University, May 2015
42. *Investigating the heart of a star*, Indian Institute for Astrophysics, Bangalore, India, December 2015
43. *How to peek inside a star*, Florida State University, January 2016
44. *How to Peek Inside a Star*, Boston University, February 2017
45. *How to peer into the hearts of stars*, AURA Member Representatives Meeting, Tucson, AZ, May 2018
46. *Peering into Stars*, Yale University, September, 2018

### Invited talks in conferences:

1. *Determining Solar Structure from Oscillation Frequencies*, Joint Discussion Group 3, XXII IAU General Assembly Meeting, The Hague, Netherlands, August 1994.
2. *The Seismic Sun*, IAU Symposium 181: Sounding Solar and Stellar Interiors, Nice, France, October 1996.
3. *Helioseismic Inversions: massive data sets and the determination of Solar Structure*, “Massive Data Sets” session, Joint Mathematics Meetings of the American Mathematical Society, San Diego, January 1997
4. *Inverse Problems in Helioseismology*, “Astrophysics & Algorithms: A DIMACS Workshop on Massive Astronomical Data Sets”, Princeton, May 1997
5. *The Seismic Sun* (award lecture), 19th meeting of the Astronomical Society of India, Bangalore, February 1999
6. *Solar Differential Rotation*, “Astrophysical Turbulence,” Santa Barbara, May 2000
7. *Solar Structure Inversions: Some Recent Results*, “XIth IRIS and LOWL/ECHO Workshop: Prospects for Ground Based Helioseismology at Low Degree,” Boulder CO, June 2000
8. *Helioseismically Deduced Solar Cycle Related Changes in the Sun*, “1st Joint Scientific Assembly of IAGA-IASPEI”, Hanoi, Vietnam, August 2001
9. *What does helioseismology tell us about structural changes with the solar cycle?* SOHO11 symposium, “From Solar Min to Max: Half a solar cycle with SOHO,” Davos, Switzerland, March 2002.
10. *Changes in the Sun: 1995 to 2001*, Spring Meeting of the American Geophysical Union, Washington DC, May-June 2002
11. *Stellar Inversions*, “Asteroseismology across the HR diagram.” Conference in Porto, Portugal July 2002
12. *Helioseismic estimates of the latitudinal dependence of solar structure and dynamics*, “3D stellar Evolution.” Workshop held at the Dept. of Applied Science, UC Davis, Livermore, CA, July 2002.
13. *Effect of Asymmetry on Ring-Diagram mode Parameters*, “Local Helioseismology Comparison Workshop,” National Solar Observatory, Tucson, AZ, March 2003.
14. *What does the Sun Teach us about Properties of Matter* (Parker Lecture), Solar Physics Division Meeting, Laurel MD, June 2003
15. *Rings diagrams: strengths and uncertainties*, “Local Helioseismology Comparison Workshop,” JILA, University of Colorado, Boulder CO, July 2003
16. *Helioseismic evidence of mixing in the Sun*, “Chemical Abundances and Mixing in Stars in the Milky Way and its Satellites,” ESO-Arcetri Workshop, Italy, September 2004
17. *Studying Stellar Evolution with (Helio)Seismology* (Plenary Talk), American Astronomical Society Meeting 207, Washington. D.C., January 2006.
18. *Interpreting solar frequencies: Methods and techniques*, “SOHO 17: 10 Years of SOHO and Beyond,” Giardini Naxos, Italy, May 2006.
19. *What has helioseismology taught us about the Sun?* “Cool Stars 14,” Pasadena, CA, November 2006
20. *Are Inputs to Standard Solar Models Correct?* American Astronomical Society Meeting 210, Honolulu, HI, May 2007
21. *Helioseismic evidence of changes inside the Sun*, Forum on Solar Influence on Climate, New Haven, CT, March 2008
22. *The solar metallicity problem: Do we have the solution?* “GONG 2008/SOHO XXI: Solar-stellar dynamos as revealed by helio- and asteroseismology,” Boulder, CO, August 2008
23. *The problem with solar abundances: Do we have the solution yet?* Workshop on Variable Stars, Beijing, China, November 2008

24. *Helioseismology as a diagnostic of the solar interior*, “HELAS: Synergies between solar and stellar modelling,” Rome, Italy, June 2009
25. *Changes in solar structure and rotation during solar cycle 23*, Joint Discussion 11: “New Advances in Helio- and Astero-Seismology,” IAU General Assembly, Rio de Janeiro, Brazil, August 2009
26. *Oscillations in Clusters: Report on KASC Working Group # 2*, 3rd Kepler Asteroseismology Workshop, “Kepler Asteroseismology in Action”, Aarhus, Denmark, June 2010
27. *GONG 2010 - SOHO 24: A summary of the conference*, GONG 2010 - SOHO 24: A new era of seismology of the Sun and solar-like stars, Aix-en-Provence, France, July 2010
28. *The issue of solar abundances*, “The power of helio- and asteroseismology”, Aarhus, Denmark, October 2010
29. *Asteroseismology*, Princeton Center for Theoretical Science program ‘Seismology of the Earth and Stars’, May 2011
30. *The structure of the solar tachocline*, Princeton Center for Theoretical Science program ‘Differential Rotation in Stars’, May 2011
31. *Why we need SONG*, 4th SONG workshop, College of Charleston, Charleston, SC, September 2011
32. *Helioseismology and the early solar luminosity*, Workshop “The Faint Early Sun: Problem, Paradox or Distraction?” STScI, Baltimore, MD, April 2012.
33. *Confronting stellar structure theory with asteroseismic data*, 9th HEDLA conference, Florida State University, Tallahassee, FL, May 2012
34. *Ensemble Asteroseismology: How Kepler is changing stellar astrophysics*, Kepler meeting-in-a-meeting, 220th meeting of the American Astronomical Society, Anchorage, AK, June 2012
35. *Helioseismic Inferences about the Sun’s Internal Abundances and Equation of State*, Workshop on Helioseismology held at the International Space Science Institute, Bern, Switzerland, Bern, Switzerland, September 2012
36. *Using Kepler to Constrain Nuclear Reactions*, Nuclear Astrophysics Town Hall meeting, Detroit, October 2012
37. *The peculiar solar cycle where do we stand?*, (Keynote lecture), “Eclipse on the Coral Sea – Cycle 24 ascending”, Palm Cove, Queensland, Australia, November 2012
38. *Helio- and Asteroseismology* (keynote address), “Advances in seismology of the Sun and stars,” Mumbai, India, December 2015
39. *Some thoughts about analyzing clusters*, “PLATO2.0: Coordination of the Stellar-Properties work packages,” University of Porto, Portugal, March 2015
40. *Determining seismic properties with asteroseismic data*, “Space Asteroseismology: the next generation,” University of Aarhus, Denmark, June 2015
41. *Seismic inferences of solar and stellar structure*, “The Sun, the stars, and the solar-stellar connection,” Kippenhauer Institute, Freiburg, Germany, September 2015
42. *Helioseismic tests of the equation of state*, Focus Meeting 17 of the General Assembly of the International Astronomical Union, Honolulu, August 2015
43. *Using the Sun as a laboratory to test physics*, Conference in honour of Phil Scherrer’s 70<sup>th</sup> birthday, Santa Cruz, CA, August 2016
44. *What helioseismology has taught us about opacities and EOS*, Workshop on Astrophysical Opacities, Kalamazoo, MI, August 2017
45. *A helioseismic perspective of solar-cycle related changes in the Sun: Evidence and unsolved issues*, Workshop in honour of Arnab Rai Chaudhuri’s 60<sup>th</sup> birthday, Jaipur, India, February 2018
46. *Large-scale flows in the Sun: Characteristics and variations*, IAU Symposium 340, Jaipur, India, 2018
47. *An Amazing Journey to the Center of the Sun* (award lecture), the Triennial Earth-Sun Summit, Leesburg VA, 2018
48. *Amazing Journeys to the Hearts of Stars* (Award Lecture), 232<sup>nd</sup> meeting of the American

Astronomical Society, Denver, CO 2018, June 2018

49. *Asteroseismology of solar-like stars with Kepler and K2 (or a celebration of Kepler!)*, “First Light in a new Era of Astrophysics”, the TASC4/Kepler11 conference, Aarhus, Denmark, July 2018
50. *Some Issues in Stellar Modelling*, Division G meeting, XXXth meeting of the IAU General Assembly, Vienna, Austria, August 2018

#### **Lectures in Summer/Winter Schools:**

1. Lecturer at the Kodaikanal School on Solar Physics, December 2006
2. Lecturer at the XXII Canary Island Winter School of Astrophysics ‘Asteroseismology’, November, 2010
3. Lecturer, Winter School on Astronomical Surveys, Tata Institute of Fundamental Research, Mumbai, India, December, 2012
4. Lecturer, Summer School on Solar Physics, Boston University, Boston, August 2012
5. Lecturer, School associates with IAU Symposium 340, Jaipur, India, February 2018

#### **Contributed talks in conferences:**

1. *The Effect of Stellar Multiplicities on the IMF and Global Star Formation Rates*, “Star Formation, Galaxies and the Interstellar Medium,” Marciana Marina, Elba, Italy, May 1992
2. *Inversion of Combined and Homogeneous Data Sets*, Working Group 9 (Internal Structure and Inversion), 4th SOHO Workshop on Helioseismology, Pacific Grove, California, USA, April 1995.
3. *Helium Abundance in the Solar Envelope*, Working Group 11 (Frequencies of High Degree Solar Oscillations) 4th SOHO Workshop on Helioseismology, Pacific Grove, California, USA, April 1995.
4. *Solar Structure as Revealed by 1 Year LOWL Data*, “Windows Windows on the Sun’s Interior,” India, October 1995
5. *Solar Cycle Variation of Large Scale Flows in the Solar Interior*, “Helioseismic diagnostics of solar activity,” Stanford, July 1999
6. *Studying Asphericity in the Solar Sound Speed*, “SOHO 10/GONG 2000 Workshop: Helio- and Asteroseismology at the dawn of the millennium” Tenerife, Spain, October 2000.
7. *Ring Diagram Analysis of the Characteristics of Solar Oscillation Modes in Active Regions*, “Local-area Helioseismology”, workshop held at Stanford Univ., Palo Alto, CA, April 2001.
8. *Ring Diagram Analysis of the Structure of Solar Active Regions*, “Local-area Helioseismology Comparisons,” workshop held at the National Solar Observatory, Tucson, AZ, February 2004.
9. *Differences between the current solar minimum and those of cycles 23 and 22*, “SOHO 23: Understanding a Peculiar Solar Minimum,” Northeast Harbor, ME, September 2009
10. *Are recent solar heavy element abundances consistent with helioseismology?*, GONG 2010 - SOHO 24: A new era of seismology of the Sun and solar-like stars, Aix-en-Provence, France, July 2010
11. *How different was the last solar minimum?* The 61st Fujihara Seminar “Progress in solar/stellar physics with helio- and asteroseismology,” Hakone, Japan, March 2011
12. *Outreach Efforts with my CAREER Grant: Working with K-12 Teachers*, American Geophysical Union Meeting, San Francisco, December 2011
13. *Asteroseismic Modelling of Kepler Stars*, *Kepler Science Meeting*, NASA AMES, December 2011
14. *Comparing the Internal Structure of the Sun during the Cycle 23 and Cycle 24 Minima*, AGU Chapman Conference on Causes and Consequences of the Extended Solar Minimum Between Solar Cycles 23 and 24, Key Largo, Florida, April 2013



**Public Lectures:**

1. *Solar Variability and How it Affects Us*, Yale New Haven Teachers' Institute, New Haven, CT, April 2004
2. *Astronomy and Astrophysics Today*, Timothy Dwight College, Yale University, New Haven CT, February 2005
3. *A journey to the centre of the Sun*, Astronomical Society of New Haven, June, 2007
4. *Peering into the heart of the Sun*, Westport Astronomical Society, Westport, CT, April 2008
5. *A Journey to the Centre of the Sun*, Yale Society of Physics Students, New Haven, CT, USA, February 2010
6. *Studying the Sun*, Peabody Fellows Summer Solar Science Program, New haven, CT, August 2011
7. *The Solar Cycle*, talk given at Peabody Museum, Yale for CT grade 5-8 teachers, November 8. 2012
9. *Studying the Sun*, talk given at Peabody Museum, Yale for CT grade 8 teachers, August 10. 2013
11. *Solar and Stellar Astrophysics Today: Questions and Techniques*, Taft School, CT, Jan 2017
12. *Listening to the Stars*, Greenwich Observatory, Greenwich CT, May 2017
13. *Solar Eclipses: The Dread and the Fascination (and the Science)*, University of South Carolina, August 2017
14. *Journey to the center of the Sun*, Stewart Observatory, Tucson. AZ, May 2018

**Teaching experience:**

1. Supervisor in mathematics, for undergraduate students, Queen Mary and Westfield College, London, U.K.
2. Supervisor for courses "Stellar Structure and Evolution" and "Stellar Oscillations" for graduate students, Aarhus University, Denmark. Conducting problem-solving classes, two hours per week.
3. Occasional lecturer in "Stellar Structure and Evolution", for graduate students, Aarhus University,
4. Denmark. I was in essence a substitute lecturer.
5. Teach graduate level courses "Stellar Astrophysics", "Radiative Processes in Astrophysics", "Physics of Astrophysics", and "Solar Physics" at Yale University.
6. Teach undergraduate course " Stars and Their Evolution" at Yale University

**Research supervision:**

1. *Post-doctoral*: Matthew Templeton (2000-2002, currently at the American Organization of Variable Star Observers), LingHuai Li (2002-2004), Anwesh Mazumdar (2005-2007, currently at the Homo Bhabha Centre for Science Education, Mumbai India), Chia-Hsien Lin (2006 - 2007, currently at the Institute of Space Science, National Central University, Taiwan), Sebastien Deheuvels (2010 - 2012; currently faculty at University of Toulouse). Jean McKeever (2017-present)
2. *Research Scientists*: LingHuai Li (2004 - 2012)
3. *Graduate Students*: Charles Baldner (2006 - 2010), Lisa Esch (2008 - 2015), Joel Tanner (2008 - 2013), Ning Gai (visiting student from Beijing Normal University; 2009 - 2010), John M. Brewer (2011 - 2016), Earl Bellinger ( 2016- 2017, visiting student from Max-Planck Inst. Goettingen), Lucas Viani (2017-present), Joel Ong J.M. (2018-present)

4. *Research projects for graduate students*: Hugh Crawl(2002), Brooke Simmons (2002), Jeffry Van Duyne (2002), R. Katherine Vieira (2003), Andrew Cantrell (2004), Lisa Ferrara (2007), Joel Tanner (2007), Ana Bonaca (2011), John M. Brewer (2011), Joseph Schmitt (2014)
5. *Undergraduate senior theses*: Daniel Isquith (2002), Braxton Collier (2004-2005), Ronli Diakow (2005-2006), Jeffrey Z. Thompson (2005-2006), Archer Kinnane (2017-2018), Katherine Melbourne (2018-present)
6. *Undergraduate research projects*: Catherine Finlay Izard (2003), Anna Mandel (2004), Braxton Collier (2005), Evan Blasy (2017-present)
7. *Freshman advising*: Freshman advisor, academic years 2001-2003, 2005-2007, 2009-2011, 2012-2013, 2017-present, for freshmen of Timothy Dwight College, Yale University (three/four advisees each year).