

CURRICULUM VITAE OF DR. SAVITA MATHUR

Astrophysicist; Speciality: Asteroseismology
Born June, 9th 1980. French citizen.
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PUBLICATIONS AND ORAL PRESENTATIONS SUMMARY

- 159 publications in total
- 110 peer-reviewed publications among which 12 as first author and 1/3 in the first three authors
- 4 publications in **Science** and 2 publications in **Nature**
- H-index = 46; 4996 citations (Source ADS 9 October 2015)
- 27 invited talks/seminars; 11 contributed talks

AWARDS AND DISTINCTIONS

- 2015: Awarded a NASA grant of \$45,000 for 1 year within the Guest Observer Program of the K2 mission as a co-I (Institutional PI) for the proposal entitled “Galactic Archeology with red giants observed by *Kepler*”
- 2014: Awarded a NASA grant of \$682,736 for 3 years as a co-I (Institutional PI) for the proposal entitled “Planet, Populations and Physics: Stellar rotation in the Kepler fields: M. Pinsonneault (PI)”
- 2014: Awarded an NSF grant of \$ 500,000 for 3 years as a co-I (Institutional PI) for the proposal entitled “Stellar Rotation and the Chronology of the Galaxy”: D. Terndrup (PI)
- 2013: Awarded a NASA grant of \$16,000 for 1 year within the Guest Observer Program for the proposal entitled “Studying magnetic activity of F stars with Kepler”: S. Mathur (PI)
- 2011: Awarded a NASA grant of \$425,000 for 3 years within the Astrophysical Data Analysis Program for the proposal entitled “Asteroseismic Tools and Analysis of Solar-like Oscillations in Archival Kepler Data”: S. Mathur (PI)
- 2013: Invited review talk on stellar magnetic activity at the European Geophysical Union
- 2012: Invited lecture on helioseismology at the Summer Research Experience for Undergraduates Program held at the University of Colorado
- 2012: Invited review talk on stellar magnetic activity with Kepler at the International Astronomical Union
- 2011: Invited review talk on stellar cycles and inference on the deeper layers at the Stellar Pulsation conference
- 2011: Invited scientist at the Kavli Institute for Theoretical Physics program on Asteroseismology in the Space Age in Santa Barbara (USA) for 5 weeks
- 2010: Awarded the title of Associate Scientist of the CoRoT mission
- 2009: Invited review talk on solar gravity modes at the Astronomical Society of India

WORK EXPERIENCE

- 2013 – present Research Scientist, Space Science Institute, Boulder, USA
Analysis and interpretation of *Kepler* observations.
- 2012 – 2013 Research Associate, High Altitude Observatory and Space Science Institute, Boulder, USA
Analysis and interpretation of *Kepler* observations.
- 2010 – 2011 HAO Postdoctoral Fellow, High Altitude Observatory, Boulder, USA
Analysis and interpretation of *Kepler* observations.
- 2008 – 2009 Chandrashekhar Postdoctoral Fellow, Indian Institute of Astrophysics, Bangalore, India
Helio- and Asteroseismology
- 2008 (3 months) Visiting Scientist, Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany.
Processing and interpretation of SDO observations.

EDUCATION

- 2004– 2007 Ph.D in Physics with Dr. S. Turck-Chièze
University of Paris XI, France. Presented on 18th December 2007
Thesis title : “Tracking gravity modes: study of the dynamics of the solar core”

RESPONSIBILITIES

- 2015–present: Director of the Center for Extrasolar Planetary Systems at SSI
2014: Co-convenor of the EGU 2014 session on Planetary systems space weather
2013: Member of the collaboration between the CoRoT mission and APOGEE
2013: Responsible of the work package to study granulation and metallicity in solar-like stars within the APOKASC
2012–present: Member of review panels for NSF and NASA grants selection
2012–present: Member of the core science team of APOKASC (a collaboration between APOGEE Sloan Digital Sky Survey 3 and the KASC targets)
2011–2012: Organizer of the Solar-Stellar Coffee every Monday to talk about a few papers released on astro-ph
2011: Member of the LOC for the KASC IV conference held at HAO
2010–present: Leader of 5 working packages on the study of solar-like oscillations within KASC: granulation in red giants, solar-like stars characterisation, stellar modelling, processing of the *Kepler* data, analysis of the public red giants
2010–2012: Member of the new AsteroFLAG international team at the ISSI
2009–present: Member of the Kepler Asteroseismic Scientific Consortium (KASC)
2009–2010: Young Scientist member of the AsteroFLAG international team at the ISSI
2009–present: Referee in a few astronomical journals (ApJ, A&A, MNRAS, BASI)

STUDENTS

- 2015: Mentor of an **undergraduate** student, N. Santiago, from the university of Puerto Rico for 6 weeks for the project: *Studying the correlation between magnetic activity and detection acoustic modes in solar-like stars observed by Kepler*
2015: Co-mentor of an **undergraduate** student, S. Zouich, from France for 3 months on the project: *On improving the A2Z pipeline*
2015: Co-mentor of a **graduate** student, M. Ravenel, from France for 3 months for the project: *Study of eclipsing binary of Kepler*
2014: Co-mentor of an **undergraduate** student, K. Houmani, from France for 5 months for the project: *Study of convective background and noise of cool dwarfs observed by Kepler*
2012: Mentor of an **undergraduate** student, C. Hedges, during summer 2012 for 8 weeks for the project: *Analysis of hundreds of Kepler red giants*
2012-2015: Mentor for one **chapter thesis** of T. Ceillier on the *Study of surface rotation of solar-like stars and red giants*

CAREER DEVELOPMENT

- 2012: Communication and leadership management course by the Dale Carnegie (8 weeks)
2012: Workplace Communication Skills at UCAR (1 day)
2012: Technical and Proposal writing Basics at UCAR (1 day)
2012: Stress Management: Simple Strategies for Work/Life Balance at UCAR(1 day)
2012: The Easy Way to Manage & Facilitate Productive Meetings at UCAR (1 day)

OUTREACH

- 2012: Participation to the NCAR solar day by presenting the stand on the Sun
2011: Organizer of the Solar-Stellar Coffee once a week (5 to 10 attendants)
2011: Press release for the Science and Nature papers on the detection of mixed modes in red giants with *Kepler*
2010: Several radios and newspaper interviews for the Science CoRoT paper on activity cycle of HD49933
2010: Presentation of the search of exoplanets with the *Kepler* mission to a group of students in secondary classes
2010: Presentation of the *Kepler* mission to a group of high school students
2009: Participation to the open doors day of the CEA by presenting the stand on the SoHO satellite
2007: Participation to the open doors day of the CEA by presenting the stand on the solar physics

TEACHING EXPERIENCE

- 2006 – 2007 Teaching Assistant, ISEP, Graduate School of Engineering in Electronics of Paris
Lectures and tutorials on Modern physics (relativity, quantum mechanics) (12h) and Electromagnetism applied to telecommunication to undergraduate students of engineering school (21h).
- 2005 – 2006 Teaching Assistant, ISEP, Graduate School of Engineering in Electronics of Paris
Lectures and tutorials on Electromagnetism applied to telecommunication to undergraduate students of engineering school (21h).
- 2012 Guest lecturer, REU program of LASP, Boulder, USA
Lecture on helioseismology (2h).
- 2013 Guest lecturer, University of Colorado, Boulder, USA
Lecture on the search of exoplanets in the astrobiology course of CU (1h1/4).

TALKS IN INTERNATIONAL MEETINGS AND INSTITUTES

INVITED

1. *The Kepler star properties catalog*, KASC 8-TASC 1 meeting, Aarhus, Denmark, June 2015
2. *Filling gaps in Kepler data for asteroseismology*, Missing Data Workshop, Nice, France, May 2015
3. *Towards Age/Rotation/Magnetic activity relation with seismology*, CoRoT3-KASC 7 meeting, Toulouse, France, July 2014
4. *Constraining stellar magnetic activity with asteroseismology*, SF2A, Paris, France, June 2014
5. *Detecting magnetic activity cycles through asteroseismology with Kepler mission*, EGU, Vienna, Austria, April 2013
6. *Magnetic activity cycles with asteroseismology*, 61st Fujihara seminar, Hakone, Japan, October 2012
7. *Studying activity and activity cycles from asteroseismology*, IAU General Assembly, Special Session 13, Beijing, China, August 2012
8. *Stellar magnetic cycles: an observational point of view with CoRoT and Kepler*, KITP, Santa Barbara, USA, November 2011
9. *Stellar cycles and inference on the deeper layers*, Stellar pulsation conference, Granada, Spain, September 2011
10. *Asteroseismic analysis and grid modeling with AMP*, KASC4 meeting, Boulder, USA, July 2011
11. *Analysis of 2 solar-like stars observed by the Kepler mission*, SF2A, Paris, France, June 2011
12. *Studying stellar magnetic activity of solar-like stars with the asteroseismic data from CoRoT*, AcroCoRoT meeting, Natal, Brazil, November 2010
13. *The quest of solar gravity modes: probing the solar interior*, ASI meeting, Bangalore, India, February 2009

SEMINARS

1. *Asteroseismology: towards constraining rotation and magnetic activity of solar-like stars*, HAO colloquium, Boulder, USA, October 2014
2. *Constraining stellar magnetic activity with asteroseismology and Kepler*, NASA Ames, Mountain View, USA, August 2013
3. *How can we constrain stellar magnetic activity with seismology?*, CU colloquium, Boulder, USA, February 2014
4. *Asteroseismology and the revolution of stellar physics*, LANL colloquium, Los Alamos, USA, January 2014
5. *Why is it the best time to be an asteroseismologist?*, IPAG colloquium, Grenoble, France, April 2013
6. *Asteroseismology results with Kepler*, Solar Science Meeting, HEPL, Stanford, USA, October 2011
7. *Insights into stars and their environment with Kepler data*, LESIA seminar, Meudon, France, December 2010
8. *Ensemble asteroseismology: a new vision inside the stars and their environment*, CEA/Sap seminar, Saclay, France, December 2010
9. *Tracking solar gravity modes*, HAO seminar, Boulder, USA, March 2010
10. *Inferring the Dynamics and the Structure of the Solar Core through g modes*, USO, Udaipur, India, July 2009
11. *Asteroseismic pipeline for Kepler*, NOAO, Tucson, June 2009
12. *Tracking solar gravity modes: the holy grail quest for helioseismology*, IIA seminar, Bangalore, India, February 2009
13. *Study of the structure and the dynamics of the Sun with g modes*, NOAO, Tucson, USA, April 2008
14. *GOLF- New Generation*, Solar Physics Seminar, HEPL, Stanford, USA, November 2005

- CONTRIBUTED
1. *Magnetic activity of F stars observed by Kepler*, Kepler II meeting, Ames, USA, November 2013
 2. *Magnetic activity of F stars*, KASC6 meeting, Sydney, Australia, June 2013
 3. *Surface Stellar Rotation and Activity of Solar-type Stars Observed by Kepler: Towards a Calibrated Age-rotation Relationship*, 221st AAS meeting, Long Beach, USA, January 2013
 4. *Investigating stellar activity with CoRoT asteroseismic data*, CoRoT Symposium, Marseille, France, June 2011
 5. *Unveiling stellar magnetic activity using CoRoT seismic observations*, SOHO24/GONG2010, Aix-en-Provence, France, June 2010
 6. *Correlation between granulation and stellar parameters in red giants*, KASC3, Aarhus, Denmark, June 2010
 7. *What can we learn on the structure and the dynamics of the solar core with g modes?*, GONG08/SOHOXXI, Boulder, USA, August 2008
 8. *Influence of p and g modes on the inferred rotation profile in the solar core*, HELAS NA3-2, La Palma, SPAIN, September 2007
 9. *Prediction of the solar gravity-mode*, DynaMICCS meeting, Saclay, FRANCE, February 2007
 10. *Performances of the Photodetector*, GOLF-NG meeting, Saclay FRANCE, November 2006
 11. *The quest of solar gravity modes*, PPARC Advanced Solar Physics Summer School, Mallorca, SPAIN, August 2006

SKILLS AND EXPERTISE

TECHNICAL SKILLS: Optoelectronics, Signal processing, Data analysis, Instrumentation, Use of the numerical code of the stellar evolution CESAM, Use of the adiabatic oscillation code, Use of the 2D inversion code. Use of Pegasus platform. Asteroseismic Modeling Portal to submit and approve jobs.

COMPUTER: Good command on IDL, Latex, Microsoft Office
Basic knowledge of Matlab, C, Fortran, Scheme, Ada, Java
Computer environment: Windows, OS-X, UNIX, LINUX
Documentation of codes with softwares: Doxygen, m2html
Software for creating workflow diagrams: ConceptDraw Office, VISIO

LANGUAGES

French and Hindi: native languages.
English: solid written and spoken skills. Scored 250 on TOEFL.
Spanish: good knowledge in speaking and writing.
Kannada: some spoken knowledge.

ACTIVITIES AND INTERESTS

Sport : swimming, climbing, hiking, yoga, biking, badminton, aerial dancing.
Music : 12 years of violin at the academies of Bayonne and Antony. Obtained final year diploma in 1996. Member of the Boulder Symphony orchestra since 2013.
Astronomy: Member of the club of astronomy of my Engineering School. Took part in stargazing events in the mountains.