

SANGHITA CHANDRA

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EMPLOYMENT

Postdoctoral position at the Max Planck Institute for Solar System Research

August 2026 – Present

EDUCATION

PhD

August 2022 – July 2026

Max Planck Research School for Solar System Science at the Technical University of Braunschweig

Title: Interpreting Solar Spicules using Synthetic Diagnostics from 3D Radiative Magnetohydrodynamic Simulations

Supervisors: Prof. Sami K. Solanki, Dr. Robert H. Cameron, Prof. Ferdinand Plaschke

Grade: Summa cum laude (distinction) **awarded on 20/07/2026**

Integrated Bachelor of Science - Master of Science

August 2017 – July 2022

Indian Institute of Science Education and Research (IISER), Kolkata

Department of Physical Sciences (DPS) and Center of Excellence in Space Sciences India (CESSI)

Title of MS Thesis: Using Kinematic Dynamo Modeling to Probe the Solar Magnetic Cycle

Supervisor: Prof. Dibyendu Nandi

Grade (CGPA): 9.31/10

PUBLICATIONS

First author:

- **Diversity of the morphology of type II spicules in MURaM-ChE simulations.** **2026**
S. Chandra, R.H. Cameron, D.F. Przybylski, S.K. Solanki, Astronomy and Astrophysics 711, A202.
DOI: <https://doi.org/10.1051/0004-6361/202659318>
- **Statistical properties of spicules in MURaM-ChE.** **2026**
S. Chandra, R.H. Cameron, D.F. Przybylski, S.K. Solanki, Astronomy and Astrophysics 706, A53.
DOI: <https://doi.org/10.1051/0004-6361/202557521>
- **Probing chromospheric fine structures with a H α proxy using MURaM-ChE.** **2025**
S. Chandra, R.H. Cameron, D.F. Przybylski, S.K. Solanki, P.A. Ondratschek, S. Danilovic,
Astronomy and Astrophysics 701, A294. DOI: <https://doi.org/10.1051/0004-6361/202555646>

Co-authored:

- **Sunrise iii/SUSI reveals extended and spectrally structured Ca II K emission above the solar limb.** **2026**
I. Milić, C.M.J Osborne, F.A. Iglesias, J.S. Castellanos Durán, D.F. Przybylski, L.P. Chitta, S. Chandra, et al.
(ApJL, under review)
- **Recovery of the Solar Cycle from Maunder-Like Grand Minima Episodes: A Quantification of the Necessary Polar Flux Threshold Through Solar Dynamo Simulations.** **2025**
C. Saha, S. Chandra, D. Nandy, Solar Physics 300 (9), 125. DOI: <https://doi.org/10.1007/s11207-025-02538-5>
- **Evidence of persistence of weak magnetic cycles driven by meridional plasma flows during solar grand minima phases.** **2022**
C. Saha, S. Chandra, D. Nandy, MNRAS Letters, Volume 517, Issue 1, Pages L36 - L40.
DOI: <https://doi.org/10.1093/mnrasl/slac104>
- **Solving Sudoku game using a hybrid classical-quantum algorithm.** **2020**
A. Pal, S. Chandra, V. Mongia, B.K. Behera, P.K. Panigrahi, Europhysics Letters 128(4):40007.
DOI: <https://doi.org/10.1209/0295-5075/128/40007>

INVITED SEMINAR TALKS

- **Plasma Dynamics Group, University of Sheffield** *Sheffield, UK; March 2026*
(online) Understanding the Solar Chromosphere's Fine Structure: Bridging MURaM Simulations and Observations
- **Indian Institute of Technology Delhi (IIT Delhi)** *Delhi, India; February 2026*
Understanding the Solar Chromosphere's Fine Structure: Bridging MURaM Simulations and Observations

- **Leibniz Institute for Solar Physics (KIS)** *Freiburg, Germany; June 2025*
Probing chromospheric fine structures with an H α proxy in MURaM simulations
- **CESSI, IISER Kolkata** *Kolkata, India; June 2025*
Probing chromospheric fine structures with MURaM simulations
- **South West Research Institute (SwRI)** *Boulder, Colorado, USA; August 2024*
Probing chromospheric fine structures with an H α proxy using MURaM
- **High Altitude Observatory (HAO)** *Boulder, Colorado, USA; August 2024*
Probing chromospheric fine structures with an H α proxy using MURaM
- **Astronomical Institute of the Romanian Academy (AIRA)** *Romania; December 2022*
(online) Persistence of Weak Magnetic Activity During Solar Grand Minima Episodes

CONFERENCE PRESENTATIONS

Invited talks:

- **USO Golden Jubilee conference** *Udaipur, India; February 2026*
Understanding the Solar Chromosphere's Fine Structure: Bridging MURaM Simulations and Observations

Contributed talks:

- **Hinode 19 and Solar C Science Meeting** *Nagoya, Japan; August-September 2026*
Solar Spicules: Insights from 3D radiative-MHD and Synthetic Diagnostics
- **Solar MHD Conference** *A Coruña, Spain; August 2026*
Solar Spicules: Insights from 3D radiative-MHD and Synthetic Diagnostics
- **Solar Orbiter - IRIS - Aditya Joint Workshop** *Berlin, Germany; March 2026*
Spicules in MURaM: Statistics, Structure, and Driving
- **Hinode-18/IRIS-16 Meeting** *London, UK; June 2025*
Solar Spicules and RBEs/RREs in MURaM simulations
- **DPG Spring Meeting** *Göttingen, Germany; March-April 2025*
Contributed Talk - Probing chromospheric fine structures with an H α proxy using MURaM
- **28th YSC on Astronomy and Space Physics** *Kyiv, Ukraine; October 2022*
(online) Contributed Talk - Persistence of Weak Magnetic Cycles During Solar Grand Minima Phases
- **Space Climate Symposium 8** *Krakow, Poland; September 2022*
Contributed Talk - Periodic behavior driven by meridional circulation during solar grand minima episodes.

Posters:

- **WE-Heraeus Seminar** *Bad Honnef, Germany; June-July 2025*
Poster - Solar Spicules and RBEs/RREs in MURaM simulations
- **17th European Solar Physics Meeting ESPM-17** *Torino, Italy; September 2024*
Poster - Probing chromospheric fine structures with H α proxy using MURaM
- **SOLARNET Conference** *Postdam, Germany; May 2023*
Poster - Investigating chromospheric fine structures using MURaM
- **40th Meeting of the Astronomical Society of India** *Roorkee, India; March 2022*
Poster - Persistence of Weak Magnetic Cycles During Solar Grand Minima Phases

RESEARCH FELLOWSHIPS, AWARDS, AND EXPERIENCES

- Awarded a seal of excellency with the grade '**Summa cum laude**' for her PhD thesis.
- **DST-INSPIRE Fellow** (2017–2022), awarded by the Department of Science and Technology, India, to students ranking in the top 1% of their board examinations.
- Selected for [Future Research Talent\(FRT\) award](#), at the **Australian National University** (2020-2021).
- **Indian Academy of Sciences Fellow** of the **Summer Research Fellowship Programme** (2019) organized by IASc-INSa-NASl.
- Scientific visitor opportunity with the **HAO** of **NCAR** in Boulder, Colorado (August 23-30, 2024).

- Participated in the **NASA Heliophysics Summer School Program** at Boulder, Colorado jointly organized by UCAR/CPAESS (August 14-22, 2024).
- Selected among 30 participants nationwide for the **Radio Astronomy Winter School** (2019), jointly organized by IUCAA and NCRA-TIFR.
- Selected to participate in the **Vijyoshi National Science Camp** (2017), organized by KVPY, DST, and IISc Bangalore, featuring talks and demonstrations by leading Indian researchers.
- **JBNSTS Scholar** (2017; 2015) and recipient of the **Bigyani Kanya Medha Britti** award.

SCIENTIFIC OUTREACH AND ORGANIZATION

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| • Mentor, DTK Dutta Contest for school students | <i>Jan 2026–present</i> |
| • Member, PHDnet Open Science Committee | <i>Mar 2024–Jun 2025</i> |
| • Organizer, Solar System School Seminars (S3) , MPS | <i>Aug 2023–Jul 2025</i> |
| • Scientific exhibition volunteer, Night of Science , MPS | <i>Jun 2025</i> |
| • Membership, Deutsche Physikalische Gesellschaft (DPG, German Physical Society) | <i>2024</i> |
| • Member, INDUS Resource Team | <i>May–Aug 2024</i> |
| • Popular science speaker, A Journey to the Sun , Birla Industrial and Technological Museum | <i>Apr 2023</i> |
| • Local Organizing Committee, National Space Science Symposium (NSSS) , India | <i>2022</i> |

FUNDING AWARDS

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| • ESA travel grant: Hinode-18/ IRIS-16 Meeting , London, UK (23-27 June, 2025) | 500 GBP |
| • Travel funding: ESPM-17 Meeting , Turin, Italy (09-13 Sept 2024) | 200 EUR |
| • Scientific visitor opportunity: HAO of the NCAR, Boulder, US (23-30 Aug 2024) | 1000 \$ |
| • Travel grant: SOLARNET Conference , Potsdam, Germany (8-12 May 2023) | 250 EUR |
| • Travel funding: Space Climate Symposium 8 , Krakow, Poland (19-22 Sept 2022) | 375 EUR |

TECHNICAL STRENGTHS

Software & Tools	HPC systems, paraview, git and GitLab, SAOImage ds9, IRAF
Models	MURaM (3D radiative-MHD model), SURYA (2D dynamo model)
Programming languages	python, C/C++, Fortran, Matlab
Operating Systems	LINUX(Ubuntu), Windows

TEACHING EXPERIENCE

Technical University of Braunschweig	Germany
Tutored the course, "The Sun and Heliosphere: Photosphere"	2025
Tutored the course, "The Sun and Heliosphere: Chromosphere"	2024
IISER Kolkata	India
Tutored the course, "Introduction to Computation (python) - CS2201"	2022
Tutored the course, "Classical mechanics - PH3101"	2021