CURRICULUM VITAE

Sowmya Krishnamurthy
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Date of birth: May 01, 1988
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EDUCATION

07.2010 - 07.2017	Ph.D. in Physics, Indian Institute of Astrophysics, Bangalore, India, thesis title 'Scattering Polarization with Paschen–Back Effect as a tool to Diagnose the Magnetic Structuring of the Solar Atmosphere', supervisor: Prof. K. N. Nagendra
07.2008 - 06.2010	M.Sc. (85%) in Physics with a specialization in Nuclear Physics, Bangalore University, Bangalore, India
07.2005 - 06.2008	B.Sc. (88.5%) with a specialization in Physics, Chemistry, and Mathematics, B.M.S. College for Women, Bangalore, India

RESEARCH APPOINTMENTS

01.2019 - present	Marie-Skłodowska Curie Fellow, Max Planck Institute for Solar System Research, Göttingen, Germany
06.2017 - 12.2018	Post Doctoral Fellow, Max Planck Institute for Solar System Research, Göttingen, Germany
01.2017 - 05.2017	Post Doctoral Fellow, Udaipur Solar Observatory, Udaipur, India
04.2016 - 12.2016	Post Doctoral Researcher, Indian Institute of Astrophysics, Bangalore, India
07.2010 - 03.2016	Doctoral Student, Indian Institute of Astrophysics, Bangalore, India

AWARDS AND MERITS

09.2016	Foreign travel grant by the Human Resource Development Group, Council of Scientific & Industrial Research, India, to participate in the conference Solar Polarization 8 Workshop held in Florence, Italy, 12–16 September, 2016
05.2014	International travel support by the Department of Science & Technology, India, to participate in the conference Theory & Modeling of Polarization in Astrophysics held in Prague, Czech Republic, 5–8 May, 2014
11.2013	Indo-Swiss research scholarship to visit Istituto Ricerche Solari Locarno, Switzerland
12.2010	Qualification for lectureship through National Eligibility Test conducted by the Council of Scientific & Industrial Research
06.2010	Six gold medals in M.Sc. for securing first rank in state level examination of Bangalore University (first among about 200 students)
07.2009	Successfully completed the Research Education Advancement Programme, a three year course conducted by the Jawaharlal Nehru Planetarium, Bangalore, India
05.2008	Sixth rank in the state level B.Sc. examination of Bangalore University (sixth among about 10,000 students)
02.2007	Second place in Bangalore Zonal Level Science Exhibition organized by the Karnataka Science & Technology Academy

SCIENTIFIC INTERESTS

- Magnetic fields on the Sun
- Spectral line formation and radiative transfer
- Inversions of the spectropolarimetric data
- Solar irradiance variability and Sun-Earth connections
- Quantum and atomic physics

CONFERENCES

Contributed talks:

- 'Chromosphere above sunspot umbra' at IRIS-10 workshop held in Bengaluru, India, 4–8 November, 2019
- 'Magnetized chromospheric downflows' at the Solar Polarization Workshop 9, Göttingen, Germany, 26–30 August 2019
- 'Magnetized chromospheric downflows' at the GREGOR meeting 2018, Staufen, Germany, 13–14 December 2018 (talk presented by Juan Sebastian Castellanos Duran)
- Thesis presentation on 'Scattering polarization with Paschen–Back effect as a tool to diagnose the magnetic structuring of the solar atmosphere' at the 36$^{\text{th}}$ annual meeting of the Astronomical Society of India, hosted by the Osmania University, Hyderabad, India, 5–9 February, 2018
- 'He I 10830 Å downflows' at GREGOR Science and Technical Development meeting, Potsdam, Germany, 27–28 November, 2017
- 'Partial frequency redistribution theory with Paschen–Back effect: application to Li I 6708 Å lines' at the Solar Polarization 8 Workshop held in Florence, Italy, 12–16 September, 2016
- 'Influence of Paschen–Back effect on the atomic spectral line polarization' in the 33$^{\text{rd}}$ annual meeting of the Astronomical Society of India, hosted by the National Centre for Radio Astrophysics of the Tata Institute of Fundamental Research, Pune, India, 17–20 February, 2015
- 'Paschen–Back effect in hyperfine structure states of an atom including the effects of partial frequency redistribution' in the WG2 meeting of the COST Action MP1104 on the Theory & Modeling of Polarization in Astrophysics held in Prague, Czech Republic, 5–8 May, 2014

Posters:

- 'Magnetized chromospheric supersonic downflows' at IAUS 354, Solar and stellar magnetic fields: origins and manifestations held in Copiapo, Chile, 30 June–6 July 2019
- 'Fast downflows in the chromosphere seen by He I 1083 nm lines' at IRIS-9 workshop held in Göttingen, Germany, 25–29 June, 2018
- 'Downflows in the chromosphere seen by He I 1083 nm lines at IAUS 340: Long-term datasets for the understanding of solar and stellar magnetic cycles held in Jaipur, India, 19–23 February, 2018
- 'Scattering theory of Paschen–Back effect: application to Li I 6708 Å doublet' at The many Scales of the Universe: Galaxies, their Suns, and their Planets; annual meeting of the Astronomische Gesellschaft held in Göttingen, Germany, 18–22 September, 2017
- 'Paschen–Back effect involving atomic fine and hyperfine structure states' at Polarimetry: from the Sun to stars and stellar environments, IAU symposium 305–Punta Leona, Costa Rica, November 30–December 5, 2014
- 'Intrinsically polarized blend lines' at the 7$^{\text{th}}$ Solar Polarization Workshop (SPW7), held at Kunming, China, 9–13 September, 2013

Attended:

- SAMI18: Meeting about Solar Activity, Magnetism and Irradiance, held at the Max Planck Institute for Solar System Research, Göttingen, Germany, 16–18 October, 2018
- WoCaNet Symposium 2017 held at the Max Planck Institute for Biophysical Chemistry, Göttingen, Germany, 12–13 October, 2017
- Rocks & Stars II conference, held at the Max Planck Institute for Solar System Research, Göttingen, Germany, 13–16 September, 2017
- Workshop on 'The magnetic universe' held by the Astronomical Society of India at the Inter University Centre for Astronomy and Astrophysics, Pune, India, 16 February 2015
- Indo-German Workshop on Solar Astronomy, held at the Indian Institute of Astrophysics, Bangalore, India, 17–18 November, 2014

INVITED SEMINARS

- 'Paschen–Back effect in atomic states as a tool for magnetic field diagnostics' at the Max Planck Institute for Solar System Research, Göttingen, Germany, 29 June, 2017

- 'Scattering polarization with Paschen–Back effect as a tool to diagnose the magnetic structuring of the solar atmosphere' at Pondicherry University, Pondicherry, India, 05 April, 2017
- 'Paschen–Back effect in atomic states as a tool for magnetic field diagnostics' at the Udaipur Solar Observatory, Rajasthan, India, 01 February, 2017
- 'F-state interference in the Paschen–Back regime' at Physikalisch-Meteorologisches Observatorium Davos, World Radiation Center, Switzerland, 23 December, 2013

MEMBERSHIP IN SCIENTIFIC SOCIETIES

06.2020 - present Junior member of the International Astronomical Union

07.2013 - present Member of the Astronomical Society of India

PUBLIC OUTREACH

- Let's talk astronomy May–June 2020, an online astronomy outreach activity for school and college students across India amid COVID-19 crisis
- Nacht des Wissens (night of science) 2019, a public outreach program at the Max Planck Institute for Solar System Research, Göttingen, Germany
- Astronomy outreach program for high school children at several private and government schools in Bangalore and Udaipur, India
- A poster on 'women in science' for the public outreach as a part of National Science Day celebrations at the Udaipur Solar Observatory, Rajasthan, India
- A poster on 'space weather and Sun-Earth connections' for the Evershed museum at the Kodaikanal Solar Observatory, Tamil Nadu, India
- Outreach programs at the Indian Institute of Astrophysics, the Jawaharlal Nehru Planetarium and the Udaipur Solar Observatory, India

TEACHING EXPERIENCE

Taught Physics and mentored college students at a non-government organization called PRERANA, Bangalore, India

ORGANIZATIONAL EXPERIENCE

- A member of the local organizing committee, Solar Polarization Workshop 9, Göttingen, Germany, 26–30 August 2019
- Postdoc representative at the Max Planck Institute for Solar System Research, Göttingen, Germany

PUBLICATIONS

A. In peer reviewed international journals

1. Nagendra, K. N., **Sowmya, K.**, Sampoorna, M., Stenflo, J. O., & Anusha, L. S. 2020: *Importance of Angle-dependent Partial Frequency Redistribution in Hyperfine Structure Transitions Under the Incomplete Paschen–Back Effect Regime*, Astrophysical Journal, 898, 49

2. Sampoorna, M., Nagendra, K. N., **Sowmya, K.**, Stenflo, J. O., & Anusha, L. S. 2019: *Polarized Line Formation in Arbitrary Strength Magnetic Fields: The Case of a Two-level Atom with Hyperfine Structure Splitting*, Astrophysical Journal, 883, 188

3. **Sowmya, K.**, Nagendra, K. N., Sampoorna, M., & Stenflo, J. O. 2015: *Polarized Scattering of Light for Arbitrary Magnetic Fields with Level-Crossings from the Combination of Hyperfine and Fine Structure Splittings*, Astrophysical Journal, 814, 127-143

4. **Sowmya, K.**, Nagendra, K. N., Sampoorna, M., & Stenflo, J. O. 2014: *Polarized Light Scattering with the Paschen–Back Effect, Level-Crossing of Fine Structure States, and Partial Frequency Redistribution*, Astrophysical Journal, 793, 71-79

5. **Sowmya, K.**, Nagendra, K. N., Stenflo, J. O., & Sampoorna, M. 2014: *Polarized Scattering with Paschen–Back Effect, Hyperfine Structure, and Partial Frequency Redistribution in Magnetized Stellar Atmospheres*, Astrophysical Journal, 786, 150-156

6. Smitha, H. N., **Sowmya, K.**, Nagendra, K. N., Sampoorna, M., & Stenflo, J. O. 2012: *Polarized Line Transfer with F-State Interference in a Non-Magnetic Medium: Partial Frequency Redistribution Effects in the Collisionless Regime*, Astrophysical Journal, 758, 112-118

6. **Sowmya, K.**, Nagendra, K. N., & Sampoorna, M. 2012: *Blend Lines in the Polarized Spectrum of the Sun*, Monthly Notices of the Royal Astronomical Society, 423, 2949-2956

B. In refereed conference proceedings

1. **Sowmya, K.**, Lagg, A., Solanki, S. K., & Castellanos Dúran, J. S. 2019: *Fast Downflows in a Chromospheric Filament*, in IAU 354 proceedings, accepted

2. Sampoorna, M., Nagendra, K. N., **Sowmya, K.**, Stenflo, J. O., & Anusha, L. S. 2019: *Polarized Line Formation with Incomplete Paschen–Back Effect and Partial Frequency Redistribution*, in ASP Conference Series, Radiative Signatures from the Cosmos, 519, 113

3. **Sowmya, K.**, Nagendra, K. N., Sampoorna, M., & Stenflo, J. O. 2017: *Partial Frequency Redistribution Theory with Paschen–Back Effect: Application to Li* I *6708 Å Lines*, in ASP Conference Series, Solar Polarization 8, submitted

4. **Sowmya, K.**, Nagendra, K. N., Sampoorna, M., & Stenflo, J. O. 2015: *Paschen–Back Effect Involving Atomic Fine and Hyperfine Structure States*, in the Proceedings of the IAU Symposium No. 305, Polarimetry: From the Sun to Stars and Stellar Environments, ed. K. N. Nagendra et al., 154-158

5. **Sowmya, K.**, Nagendra, K. N., & Sampoorna, M. 2014: *Intrinsically Polarized Blend Lines*, in ASP Conference Series Volume 489, Solar Polarization 7, ed. K. N. Nagendra et al. (San Francisco, CA:ASP), 125-131