



# Sandra Chulliparambil Shaju

---

## Personal Information

Address : Herzogstraße 7, Mülheim an der Ruhr, 45479, Germany  
Date of Birth : 10 November 1999  
Place of Birth : Thrissur  
Nationality : India  
Email : sandra.shaju@uni-due.de  
Matriculation : 3180831  
Number

## Scientific Interests

- Magnetic spin structures: Hopfions, Skyrmions, Screw dislocations
- Micromagnetic simulations, Effective models
- Three-dimensional nanomagnetism

## Education

- 2022-2026 **Ph. D. Candidate**, *University of Duisburg-Essen, Germany*  
Working Title: Three-Dimensional Magnetic Textures Across Bulk Chiral, Screw Chiral and Frustrated Micromagnetic Models  
Supervisor: Prof. Dr. Karin Everschor-Sitte
- 2020-2022 **M. Sc. Physics**, *Cochin University of Science and Technology, Cochin, India*,  
*CGPA: 9.2/10*  
Master Thesis: Non-DMI stabilization of skyrmions in NiMnGa nanocaps  
Supervisor: Prof. Dr. Senoy Thomas
- 2017-2020 **B. Sc. Physics**, *St. Thomas College (Autonomous), Thrissur, Kerala, India*, (Calicut University)  
*CGPA: 5.92/6*  
Bachelor Thesis: Investigation on structural and spectroscopic properties of Selenium doped Silica in the presence of Copper ion  
Supervisor: Prof. Dr. Ann Mary
- 2015-2017 **Higher Secondary School**, *Government Higher Secondary School, Nandikkara, Kerala, India*, (Higher Secondary Board of Education, Kerala, India)  
*Grade: A+ (90% and above)*

## Internships

- 05/2023–  
06/2023 **Research Stay in the group of Prof. Dr. Stefan Blügel**, *Peter Grünberg Institute – Quantum Theory of Materials (PGI-1/IAS-1) of Forschungszentrum Jülich GmbH*
- Acquisition of basic knowledge regarding methods for calculating the lifetimes of magnetic structures: e.g. Geodesic Nudged Elastic Band (GNEB)
  - Familiarization with the usage and application of the “Spirit” code through its graphical user interface as well as the Python API

## Awards

- Since 2025 **Studienstiftung des deutschen Volkes Doctoral Scholarship**, *Doctoral Scholarship given to students “who, because of their exceptional academic or artistic talents and personal qualities, can be expected to make an outstanding contribution to society as a whole”*
- 2022 **First Rank**, in *M.Sc. Physics Cochin University of Science and Technology, Kerala, India*
- 2017-2022 **INSPIRE Scholarship**, *A scholarship constituted by the Department of Science and Technology (DST), Government of India, (Awarded to the students who score aggregate marks within top 1% in their Higher Secondary School examination, to pursue courses in Natural and Basic Sciences at the B.Sc. and M.Sc. level)*

## Publications

- 3D Magnetic Textures with Mixed Topology: Unlocking the Tunable Hopf Index**, *M. Azhar, S. C. Shaju, R. Knapman, A. Pignedoli, K. Everschor-Sitte*  
arXiv:2411.06929 (Accepted in SciPost)
- Hopfions in Screw Chiral Magnets**, *S. C. Shaju, M. Azhar, K. Everschor-Sitte*  
APL Mat. 14, 051111 (2026)

## Workshops, Schools and Conferences Attended

- 07/2026 **3DMAG**, *Vienna, Austria*  
Poster: Hopfions in Screw Chiral Magnets  
Duration: 5 days
- 05/2026 **Invited Talk in the group of Prof. Dr. Manfred Albrecht**, *Augsburg, Germany*  
Talk: Hopfions in screw chiral magnets  
Duration: 1 day
- 03/2026 **DPG Meeting of the Condensed Matter Section**, *Dresden, Germany*  
Talk: Hopfions in symmetry transformed magnetic models  
Duration: 7 days
- 02/2026 **SPP Skyrmionics Workshop**, *Bad Honnef, Germany*  
Talk: Screw Chiral Magnets  
Duration: 5 days
- 10/2025 **TWIST Retreat**, *Gelsenkirchen, Germany*  
Talk: Presenting a Scientific Poster  
Duration: 3 days
- 08/2025 **JEMS**, *Frankfurt, Germany*  
Poster Presentation: Sliding Through Topology: Unlocking the Tunable Hopf Index  
Duration: 5 days

- 03/2025 **DPG Meeting of the Condensed Matter Section, Regensburg, Germany**  
Poster Presentation: Sliding Through Topology: Unlocking the Tunable Hopf Index  
Duration: 7 days
- 04/2024 **Workshop on “Nanomagnetism in 3D”, Ingelheim, Germany**  
Poster Presentation: Stabilization of Magnetic Hopfions in Bulk Magnets  
Duration: 3 days
- 03/2024 **DPG Meeting of the Condensed Matter Section, Berlin, Germany**  
Poster Presentation: Stabilization of Magnetic Hopfions in Bulk Magnets  
Duration: 7 days
- 12/2023 **PETASPIN 2023 School on “Spintronics: Fundamentals and Applications” - II edition, Messina, Italy**  
Recorded talk: Magnetic Hopfions  
Duration: 3 days
- 10/2023 **TWIST Retreat, Radevormwald, Germany**  
Talk: Pitch Talks and Improvisations  
Duration: 3 days
- 09/2023 **European School on Magnetism, Madrid, Spain**  
Poster Presentation: Magnetic Hopfions in Frustrated Magnets  
Duration: 14 days
- 03/2023 **DPG Meeting of the Condensed Matter Section, Dresden, Germany**  
Poster Presentation: Magnetic Hopfions in Frustrated Magnets  
Duration: 7 days

## Soft Skill Workshops Attended

- 10/2023 **Workshop on “Academic Writing”, Workshop organized by GC Plus, University of Duisburg-Essen, Germany**  
Duration: Half day
- 08/2023 **Workshop on “Self-, Time- and Project-Management – Personal Development for reaching more in less time”, Workshop organized by Centre for Nanointegration (CENIDE), University of Duisburg-Essen, Germany**  
Duration: 1 day
- 08/2023 **Workshop on “Leading discussions in small and large groups”, Workshop organized by the team for Equal Opportunities of the Faculty of Physics as part of Soft Skill Summer 2023, University of Duisburg-Essen, Germany**  
Duration: 1 day
- 08/2023 **Workshop on “Women and Career”, Workshop organized by the team for Equal Opportunities of the Faculty of Physics as part of Soft Skill Summer 2023, University of Duisburg-Essen, Germany**  
Duration: 1 day

## Teaching Activities

### Co-Supervision

- 06/2025–  
08/2025 **Niklas Oettgen, Bachelor Thesis, “Stabilization of Hopfions in Bulk Magnets”**

## Course

- SS 2026 **Tutor**, *Quantum Mechanics (Theory IV)*, Prof. Dr. Karin Everschor-Sitte, University of Duisburg-Essen, Germany
- SS 2025 **Course Co-Organizer**, *Analytical Mechanics (Theory II)*, Prof. Dr. Karin Everschor-Sitte, University of Duisburg-Essen, Germany
- WS 2024 **Tutor**, *Newtonian Mechanics and Special Relativity (Theory I)*, Prof. Dr. Karin Everschor-Sitte, University of Duisburg-Essen, Germany
- SS 2024 **Tutor**, *Atomic and Molecular Physics, Quantum Phenomena (Exp. IV)*, Prof. Dr. Martin Mittendorf, University of Duisburg-Essen, Germany
- WS 2023 **Tutor**, *Statistical Physics (Theory V)*, Prof. Dr. Karin Everschor-Sitte, University of Duisburg-Essen, Germany

## Skills

### Programming

- Matlab ● ● ● ● ○
- Python ● ● ● ○ ○

### Scientific Software and Graphics

- Mumax3 ● ● ● ● ½
- Paraview ● ● ● ● ½
- Netgen ● ● ● ● ○
- Nmag ● ● ● ● ○
- Origin ● ● ● ● ○
- Latex ● ● ● ½ ○
- Spirit ● ● ● ○ ○

### Operating Systems

- macOS ● ● ● ● ½
- Windows ● ● ● ● ○

### Languages

- Malayalam ● ● ● ● ●
- English ● ● ● ● ½
- Hindi ● ● ● ● ○
- German ● ● ○ ○ ○