

Anshu Kataria

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PROFILE

A hardworking, resourceful and dedicated scientist specialising in novel material synthesis, including technologically advanced quantum materials. Adept at investigating their properties using different macro- and microscopic measurement techniques with techniques as muon-spin spectroscopy and nuclear magnetic resonance.

RESEARCH EXPERIENCE

Spin-charge-lattice coupling in relativistic Mott insulator <i>Post Doctoral Fellow</i>	University of Parma (Italy) May 2024-Present
Investigation of 3d and 4d oxide superconductors <i>Research Associate</i>	JNCASR (India) 1 Oct. 2023-June 2024
Microscopic Studies of Quantum Materials <i>Post Doctoral Fellow in INDIA-ISIS RAL project</i>	JNCASR (India) ISIS-RAL (UK) 12 June 2023-30 Sept. 2023
Probing Time-Reversal Symmetry Breaking in Unconventional Superconductors <i>PhD Thesis</i>	IISER Bhopal, India 27 July 2018 –10 June 2023
Design and Fabrication of Bandpass Filter for Microwave and Radiowave Frequency by the Method of Coplanar Waveguides <i>Master Thesis</i>	University of Delhi, India 2 Jan. 2018 –31 May 2018

EDUCATION

Indian Institute of Science Education and Research Bhopal PhD Student, Department of Physics	Bhopal, India 2018–2023
University Of Delhi M.Sc. Physics, Department of Physics and Astrophysics B.Sc.(H) Physics, Department of Physics	Delhi, India 2018 2016

TECHNICAL AND EXPERIMENTAL SKILLS

- Experience in high-pressure synthesis of metal oxides (4.5 GPa, 1000° C)
- Experience in material synthesis of novel quantum materials, including unconventional superconductors, magnetically frustrated systems, nontrivial topological materials and van der Waal (2D) materials
- Strong understanding of quantum material such as superconductors and topological materials including their properties and potential application
- Extensive knowledge of various single-crystal growth techniques and instruments such as optical floating zone, tetra-arc furnace, flux growth, Bridgman method and chemical vapour transport
- Experience with a variety of laboratory equipment, including X-ray diffractometer, SQUID and PPMS
- Familiar with large-scale synchrotron facilities like neutron and muon-spin spectroscopy
- Proficiency in programming languages, including MATLAB and data analysis and graphing software
- Excellent problem-solving and analytical skills, with a focus on achieving results within tight deadlines
- Experience working with various analytical and refinement software, including FullProf, JANA, Mantid, Musrfit, WiMDA, and Highscore+

- Strong written and verbal communication skills, with the ability to present research findings to both technical and non-technical audiences

ACHIEVEMENTS AND AWARDS

- Secured CSIR travel grant for an international conference in Italy.
- Won a best poster presentation award in Physics of Strongly Correlated Electron Systems (PSCES) 2023 conference at the IISER Pune, India.
- Achieved a ranking within the top 100 students among 30,000+ candidates in an examination conducted by the Council of Scientific and Industrial Research (CSIR) year 2018, Government of India.
- Qualified Graduate Aptitude Test in Engineering (GATE-2018).
- Scored Rank 19 in Joint Entrance Screening Test (JEST) Exam-2018.
- Ranked within the top 5 % of the University of Delhi in the Bachelor of Science degree year 2016.

TALKS AND PRESENTATIONS

Talk and Poster on **Time reversal symmetry breaking nonsymmorphic type-I Superconductor YbSb_2** at *15th* international conference of muon spin rotation, relaxation and resonance (2020) at the University of Parma, Italy.

Poster on **Superconducting Ground State study of valence skipped compound AgSnSe_2** at Physics of Strongly Correlated Electron Systems (PSCES) 2023 at the IISER Pune, India.

Poster on **Superconducting Ground State study of valence skipped compound AgSnSe_2** at In-House Symposium (2023), Department of Physics, IISER Bhopal, India.

Poster on **Neutron and μSR investigation of antiferromagnetic heavy fermion CeNiGe_3** at In-House Symposium (2023), JNCASR, Bangalore, India.

Invited talk on **Multipolar order in $5d^2$ osmates: $\text{Ba}_2\text{CaOsO}_6$** at FisMat 2025, Venice, India.

Poster on **Quadrupolar Level Crossing Resonance in Kagome Metals AV_3Sb_5** at *16th* international conference of muon spin rotation, relaxation and resonance (2025) at the St. John's, Newfoundland, Canada.

WORKSHOPS AND SCHOOLS

Users Meeting and Workshop on Data Analysis of Neutron Scattering (Elastic and Inelastic), June 2023 at JNCASR, India.

The **5th Neutron and Muon School**, KEK-IINAS School, 2021.