

Susmita Saha

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Education:

Ph.D. in Nano science and Nano Technology (Date of defense: 4th May, 2016)

S. N. Bose National Centre for Basic Sciences under University of Calcutta, Kolkata, India

Thesis : Collective Magnetization Dynamics in Magnetic Nanostructures at Various Length Scales and Time Scales

Supervisor: Prof. Anjan Barman

M.Sc. in Physics, in 2009 (Marks obtained:74.8%)

University of Calcutta, Kolkata, India.

B.Sc. in Physics (Honours), in 2007(Marks Obtained 65%)

University of Calcutta, Kolkata, India.

Experience:

Post Doctorate Researcher (Jan 2016 – Dec 2019)

ETH Zurich and Paul Scherrer Institute, Switzerland,

Awards and Scholarships:

- ETH Zurich Post Doctoral research fellowship award-2016, Funded by ETH Zurich and Marie Curie Action people COFUND Program
- Successful contribution in Swiss National Foundation (SNF) proposal-2017.
- Joint CSIR-UGC Junior Research Fellowship and Eligibility for Lectureship (NET), 2009
- Best Oral presentation in Bosefest 2013, S. N. Bose National Centre for Basic Sciences, Kolkata, India.
- Best Poster award in ICCFM-2018, Kolkata, India
- Organizer of a session named “Magnetism and spintronics on the nanoscale” in Swiss Physical Society meeting 2017, Geneva, Switzerland.
- Poster Judge for Swiss Physical Society meeting 2018, Lausanne, Switzerland.

- Best Poster in International Conference on Magnetic Materials and Applications (ICMagMA) 2013, IIT Guwahati, India.
- Travel Grant from DST SERB to attend INTERMAG Conference 2014 in Dresden Germany.

Current area of research:

- Time domain study of magnetization dynamics of magnetic nanostructures using a time-resolved magneto-optical Kerr effect microscope (TR-MOKE) technique.
- Element specific magnetization dynamics using ultrashort XUV pulses (Current Research topic).
- Damping modulation by Spin orbit torque
- Spinwave dynamics of artificial spin ice in order to achieve reprogrammable magnonic crystals.
- Magnetic skyrmions using Dzyaloshinskii Moriya interaction

Experimental skills:

- Developed all optical time-resolved magneto-optical Kerr microscope (TR-MOKE) set up at Paul Scherrer Institute, Switzerland and modified that to electrical excitation and optical detection TRMOKE set up.
- Deposition of thin film using RF/DC magnetron sputtering unit.
- Experienced in working clean room facilities.
- Worked on scanning transmission x-ray microscopy (STXM) and x-ray magnetic circular dichroism (XMCD) techniques at Swiss Light Source, Switzerland.
- Used broadband ferromagnetic resonance spectrometer with vector network analyzer (VNA-FMR) in reflection geometry.

Computational Skills:

- Micromagnetic Simulations: OOMMF, LLG Micromagnetic Simulator, ORIGIN, MATLAB.

International exchange visits:

- Invited presentation in University of Bialystok, Poznan and Institute of Physics Poznan.
- Visited “Durham University, UK” under Prof. Del Atkinson as a part of joint project funded by DST- UKIERI for 15 days.
- Took part in time resolved x-ray diffraction beamtime on osmates at SACLA, Japan.

Conferences attended:

International:

1. Joint MMM-INTERMAG- 2019, Washington DC, Jan 14th to 19th, 2019, Oral presentation
2. International Conference on Magnetic Materials and Applications (ICMagMA) 2018, NISER Bhubaneswar, India, Dec. 9-13, 2018, Oral presentation.
3. ICCFM-2018, Kolkata, India, Dec 13th to 16th Dec. 2018, Poster presentation.
4. Swiss Physical Society Meeting (SPS Meeting 2018), Lausanne, Switzerland, Aug. 28st to 31th 2018 (Oral presentation, Poster Jury)
5. Gordon Research Society meeting (Spin Dynamics in nanostructures), La Diablerets, Switzerland, July 16th to 21st 2017, Poster presentation
6. International Workshop “Magnetism, Interactions, and Complexity: a multifunctional aspects of spin wave dynamics”, Poznan, Poland, July 2-6, 2017 (MagIC 2017), Oral presentation.
7. Swiss Physical Society Meeting (SPS Meeting 2017), Geneva, Switzerland, Aug. 21st to 25th 2017 (Session Organizer, Poster presentation, session chair)
8. Swiss Physical Society Meeting (SPS Meeting 2016 and Season Chair), Lugano, Switzerland, August 23rd-25th 2016, Oral presentation (with session chairing)
9. 61st Annual Conference on Magnetism and Magnetic Material (MMM-2016), New Orleans, USA, Oct 31st to Nov 4th, 2016 , Oral presentation
10. The International Conference on Nanoscience and Technology (ICONSAT) 2014, Mohali, India, March 3 – 5, 2014, Poster presentation.
11. International Magnetics Conference (INTERMAG – 2014), Dresden, Germany, May 4 - 8, 2014, Oral and Poster presentation.
12. International Conference on Magnetic Materials and Applications (MagMA) 2013, IIT Guwahati, India, Dec. 5-7, 2013, Poster presentation.
13. Conference on Advanced Functional Materials, S. N. Bose National Centre for Basic Sciences, India, Mar. 1 – 2, 2012.

School attended:

Attended “5th IEEE Magnetic Society Summer School”, Organized at SRM University, Chennai, India July 22-27, 2012

Professional Development:

1. Part-time Lecturer at Vidyasagar Evening college for 2009 to 2010 :

Courses taken: Optics, Classical Mechanics, General theory of Relativity, Practical classes for bachelor students
2. Supervising a PhD student at ETH Zurich.
3. Helped my supervisor with exercise classes for “Material Characterization” course at ETH Zurich for Bachelor students in 2016 and 2017
4. Attended “Learn to Teach” course at ETH Zurich, 2017
5. Attended “How to give a good presentation using storytelling” at ETH Zurich, 2017.
6. Attended a course on “Project Management” at ETH Zurich, 2017.
7. Attended a writing course on “How to write a proposal for Horizon 2020”.

List of publications:**Submitted:**

- Spin-wave dynamics and symmetry breaking in an artificial spin ice, **S. Saha**, J Zhou, K Hofhuis, A Kákay, V Scagnoli, LJ Heyderman, S Gliga, arXiv preprint arXiv:2011.04505

Published:

1. Control of Damping in Perpendicularly Magnetized Thin Films using Spin-Orbit Torques, **S. Saha**, P. Flauger, C. Abert, A. Hrabec, Z. Luo, J. Zhou, V. Scagnoli, D. Suess and L. J. Heyderman, Phys. Rev. B 101, 224401 (2020) (Impact factor: 3.736)
2. Formation of Néel Type Skyrmions in an Antidot Lattice with Perpendicular Magnetic Anisotropy, **S. Saha**, M. Zelent, S. Finizio, M. Mruzckiewicz, S. Tacchi, A. K. Suszka, S. Wintz, N. S. Bingham, J. Raabe, M. Krawczyk, and L. J. Heyderman, Phys. Rev. B 100, 144435, (2019) (Impact factor: 3.736)
3. All-optical investigation of tunable picosecond magnetization dynamics in ferromagnetic nanostripes with a width down to 50 nm, **S. Saha**, S. Barman, Y. Otani and A. Barman, Nanoscale 7, 18312(2015). (Impact factor: 7.39)
4. Tunable picosecond spin dynamics in two dimensional ferromagnetic nanodot arrays with varying lattice symmetry, **S. Saha**, S. Barman, S. Sugimoto, Y. Otani and A. Barman, RSC Advances 5, 30748 (2015). (Impact factor: 3.289)
5. Tunable magnonic spectra in two-dimensional magnonic crystals with variable lattice symmetry, **S. Saha**, R. Mandal, S. Barman, D. Kumar, B. Rana, Y. Fukuma, S. Sugimoto, Y. Otani and A. Barman, Adv. Funct. Mater. 23, 2378 (2013). (Impact factor: 13.32)
6. Time-domain study of spin-wave dynamics in two-dimensional arrays of bi-component magnetic structures, **S. Saha**, S. Barman, J. Ding, A. O. Adeyeye and A. Barman, Appl. Phys. Lett. 102, 242409 (2013) (Impact factor: 3.2)
7. Tunable magnetic anisotropy in two-dimensional arrays of Ni₈₀Fe₂₀ elements, **S. Saha**, S. Barman, J. Ding, A. O. Adeyeye, and A. Barman, Appl Phys. Lett. 103, 242416 (2013). (Impact factor: 3.2)
8. Controlled motion of skyrmions in a magnetic antidot lattice, J. Feilhauer, **S. Saha**, J. Tobik, M. Zelent, L. J. Heyderman and M. Mruzckiewicz, Phys. Rev. B 102, 184425 (2020) (Impact factor: 3.736)
9. Ultrafast-laser-induced magnetization dynamics in antiferromagnetically coupled ferromagnetic thin films, J. Zhou, **S. Saha**, Z. Luo, E. Kirk, V. Scagnoli and L. J. Heyderman, Phys. Rev. B, 101, 214434 (2020) (Impact factor: 3.736)
10. Single femtosecond laser pulse excitation of individual cobalt nanoparticles, T. M Savchenko, M. Buzzi, L. Howald, S. Ruta, J. Vijayakumar, M. Timm, D. Bracher, **S. Saha**, P. M Derlet, A. Béch e, J. Verbeeck, R. W Chantrell, CAF Vaz, F. Nolting, A. Kleibert, Phys. Rev. B 102, 205418 (2020)
11. Generation of coherent extreme ultraviolet radiation from α -quartz using 50 fs laser pulses at a 1030 nm wavelength and high repetition rates, T. T. Luu, V. Scagnoli, **S. Saha**, L. J Heyderman, H. J. W rner, Optics letter, 43, 1790 (2018) (Impact factor: 3.4)
12. Observation of the out-of-plane magnetization in a mesoscopic ferromagnetic structure superjacent to a superconductor, A. K. Suszka, S. Gliga, P. Warnicke, S. Wintz, **S. Saha**, K. M. Charipar, H. Kim, P. Wohlhuter, E. Kirk, S. Finizio, J. Raabe, J. D. S. Witt, L. J. Heyderman, and N. S. Bingham, Appl. Phys. Lett 113, 162601 (2018) (Impact factor: 3.2)
13. Field-dependent spin waves in high-aspect-ratio single-crystal ferromagnetic nanowires, S. Pal, S. Saha, M. V. Kamalakar and A. Barman, Nano research, 9, 1426 (2016). (Impact factor: 7.01)
14. Enhanced Amplification and Fan-out Operation in an ALL- Magnetic transistor , S. Barman, **S. Saha**, S. Mondal and A. Barman, Scientific Report, 6, 33360 (2016). (Impact factor: 5.2)

15. Shape and Interface Induced Control of Spin Dynamics of Two-dimensional Bi-component Magnonic Crystals, S. Choudhury, **S. Saha**, R. Mandal, S. Barman, Y. Otani, and A. Barman, ACS Appl. Mater. Interfaces, 8, 18339 (2016) (Impact factor: 7.45)
 16. Dependence of spin wave properties in [Co/Ni₈₀Fe₂₀]_n multilayers on the number of repetitions, C. Banerjee, A. K. Chaurasiya, **S. Saha**, J. Sinha and A. Barman, J. Phys. D: Appl. Phys. 48, 395001 (2015). (Impact factor: 2.77)
 17. Tunable Magnetization Dynamics in Interfacially Modified Ni₈₁Fe₁₉/Pt Bilayer Thin Film Microstructure, A. Ganguly, S. Azzawi, **S. Saha**, J. A. King, R. M. Rowan-Robinson, A. T. Hindmarch, J. Sinha, D. Atkinson and A. Barman, Scientific Report 5, 17596 (2015). (Impact factor: 5.22)
 18. Tunable Spin Wave Spectra in Two-Dimensional Ni₈₀Fe₂₀ Antidot Lattices with Varying Lattice Symmetry, R. Mandal, S. Barman, **S. Saha**, Y. Otani and A. Barman, J. Appl. Phys. 118, 053910 (2015). (Impact factor: 2.1)
 19. Fast and facile preparation of CTAB based gels and their applications in Au and Ag nanoparticles synthesis , R. K. Upadhyay, N. Soin, **S. Saha**, A. Barman and S. S. Roy, Materials Chemistry and Physics 156, 105 (2015).
 20. Grape Extract Assisted Green Synthesis of Reduced Graphene Oxide for Water Treatment Applications, R. K. Upadhyay, N. Soin, **S. Saha**, A. Barman and S. S. Roy, Materials Letters 160, 355 (2015).
 21. Width dependent transition of quantized spin-wave modes in Ni₈₀Fe₂₀ square nanorings, C. Banerjee, **S. Saha**, S. Barman, O. Rousseau, Y. Otani and A. Barman, J. Appl. Phys. 116, 163912 (2014). (Impact factor: 2.1)
 22. Effects of antidot shape on the spin wave spectra of two-dimensional Ni₈₀Fe₂₀ antidot lattices, R. Mandal, P. Laha, K. Das, **S. Saha**, S. Barman, A. K. Raychaudhuri and A. Barman, Appl. Phys. Lett. 103, 262410 (2013). (Impact factor: 3.2)
 23. Optically induced tunable magnetization dynamics in nanoscale Co antidote lattices, R. Mandal, **S. Saha**, D. Kumar, S. Barman, S. pal, B. Rana, K. Das, A. K. Raychaudhuri, Y. Fukuma, Y. Otani, and A. Barman, ACS Nano 6, 3397(2012). (Impact factor: 13.2)
 24. Time-resolved measurement of spin-wave spectra in CoO capped [Co(t)/Pt(7Å)]_{n-1} Co(t) multilayer systems, S. Pal, B. Rana, **S. Saha**, R. Mandal, O. Hellwig, J. Romero-Vivas, S. Mamica, J. W. Klos, M. Mruczkiewicz, M. L. Sokolovskyy, M. Krawczyk, and A. Barman, J. Appl. Phys. 111, 07C507 (2012). (Impact factor: 2.1)
 25. Magnetization reversal dynamics in Co nanowires with competing magnetic anisotropies, S. Pal, **S. Saha**, D. Polley and A. Barman, Solid state Commun. 151, 1994 (2011). (Impact factor: 1.93)
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Personal Information:

Date of Birth : 12th Nov, 1986

Nationality: Indian Sex: Female

Marital Status: Unmarried

Permanent residential address: Vivekananda pally, Falakata, Alipurduar, West Bengal, Pin: 735211, India Present

residential address: 1204, Villavagen 9B, 75236 Uppsala, Sweden

Hobbies: Reading Novels, Listening music, Travelling,