

CURRICULUM VITAE

PERSONAL INFORMATION:

Name : Sabyasachi Mukherjee

Date of Birth : 4th February, 1986

Nationality : Indian

Official Address: Institute for Mathematical Sciences, Math Tower 4-115, Stony Brook University, Stony Brook, NY, 11794-3660, USA

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Current position : Lecturer at Stony Brook University, USA since August 2015.

EDUCATIONAL INFORMATION:

1. 2002-2004: Higher Secondary from Hindu School (West Bengal Council of Higher Secondary Education), India in First Division; degree awarded on 27th July, 2004.
2. 2004-2007 : Bachelor of Science (Mathematics (Honours), Physics, and Computer Science) from University of Calcutta, India with First Class; degree awarded on 23rd July, 2007.
3. 2007-2009 : Master of Science (Pure Mathematics) from University of Calcutta, India with First Class; degree awarded on 15th September, 2009.
4. 2009-2010 : Ph.D. coursework in Mathematics at Ramakrishna Mission Vivekananda University, India with 8.75 grade points out of 10 (Grade Sheet issued on 27th May, 2010).
5. 2010-2011 : 'Master mention Mathématiques et Informatique' (Masters in Mathematics and Informatics) from Université Paris 13, France with 15.18 grade points out of 20 with mention 'Bien'; degree awarded on 2nd December, 2011.
6. 2012-2015 : Ph.D. in Mathematics with special distinction from Jacobs University Bremen, Germany; degree awarded on 20th August, 2015.

Ph.D. thesis:

Title:

Antiholomorphic dynamics: topology of parameter spaces, and discontinuity of straightening.

Ph.D. adviser:

Dierk Schleicher, Jacobs University, Bremen, Germany.

Jury:

John Hamal Hubbard (Cornell University), Alan Huckleberry (Ruhr-Universität Bochum/Jacobs University), Hiroyuki Inou (Kyoto University), Keivan Mallahi-Karai (Jacobs University), John Milnor (Stony Brook University), Dierk Schleicher (Jacobs University).

M.Sc. dissertation:

Title:

A detailed proof of Melnikov's theorem on persistence of lower-dimensional tori in nearly integrable Hamiltonian systems, and deduction of the classical KAM theorem.

Adviser of M.Sc. dissertation:

Ricardo Perez-Marco, Université Paris 13, Paris, France.

Research Interest:

Parameter spaces of holomorphic and antiholomorphic dynamical systems.

TEACHING EXPERIENCE:

1. Teaching assistant for Hans Feichtinger, Olga Holtz and Don Zagier, 'Modern Mathematics - International Summer School for Students, 2013', Jacobs University Bremen.
2. Teaching assistant for the course 'ODE and dynamical systems' (instructor: Dierk Schleicher), Fall semester 2013, Jacobs University Bremen.
3. Teaching assistant for the course 'Introductory complex analysis' (instructor: Dierk Schleicher), Fall semester 2014, Jacobs University Bremen.
4. Teaching assistant for the course 'Topics in complex analysis- holomorphic dynamics and Kleinian groups' (instructor: Dierk Schleicher), Spring semester 2015, Jacobs University Bremen.
5. Calculus C (course instructor), Fall semester 2015, Stony Brook University, USA.
6. Introduction to dynamical systems (course instructor), Spring semester 2016, Stony Brook University, USA.
7. Calculus II (course instructor), Fall semester 2016, Stony Brook University, USA.
8. Differential Equations with Linear Algebra (course coordinator), Spring semester 2017, Stony Brook University, USA.
9. Calculus A (course instructor), Fall semester 2017, Stony Brook University, USA.
10. Introduction to linear algebra (course instructor), Spring semester 2018, Stony Brook University, USA.

FELLOWSHIPS QUALIFIED FOR:

1. Fellowship for M.Math. at Indian Statistical Institute, Bangalore, India (2007).
2. Fellowship for Ph.D. in mathematics at Institute of Mathematical Sciences, Chennai, India (2009).
3. Fellowship for Ph.D. in mathematics at Tata Institute of Fundamental Research, Mumbai, India (2009).
4. Fellowship for Ph.D. in mathematics from National Board of Higher Mathematics, India (2009).

5. 'Bourses d'excellence' for Research Masters in Mathematics from Université Paris 13, France (2010).
6. Full scholarship for Ph.D. in Mathematics at University of Toronto, Canada (2012).
7. Full scholarship (Overseas Research Scholarship) for Ph.D. in Mathematics at University of Surrey, England (2012).

SEMINARS/CONFERENCES ATTENDED:

1. Weekly seminars of the 'Dynamical systems and ergodic theory' group at Université Paris 13, France during the academic year September, 2010 - June, 2011.
2. 'Instructional Workshop on Ergodic Theory' at Kerala School of Mathematics, India from October 17 to November 4, 2011.
3. Workshop on 'Holomorphic Dynamics - ¿ MLC Status and Quo Vadis?' at Sominstationen, Holbaek, Denmark from September 27 to September 30, 2012.
4. Conference on 'The role of complex analysis in complex dynamics' at the International Centre for Mathematical Sciences, Edinburgh, UK from May 20 to May 24, 2013.
5. Workshop on 'Topics in complex dynamics' at Universitat de Barcelona, Barcelona, Spain from June 10 to June 14, 2013.
6. The First 'Heidelberg laureate Forum' at Heidelberg, Germany from September 22 to September 27, 2013.
7. Conference on 'Topological and Combinatorial Problems in One-dimensional Complex Dynamics' at Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy from October 14 to October 18, 2013.
8. Conference on 'Holomorphic and Symbolic Dynamics' at Mathematical Institute, Toulouse, France from January 20 to January 24, 2014.
9. 'Bremen Winter School on Kleinian Groups and Transcendental Dynamics' at Universität Bremen, Bremen, Germany from April 7 to April 11, 2014.
10. Conference on 'Topological and geometric methods in low-dimensional dynamical systems' at Higher School of Economics, Moscow, Russia from May 11 to May 16, 2014.
11. Conference on 'Perspectives of Modern Complex Analysis' at Banach Center Conferences, Bedlewo, Poland from July 21 to July 25, 2014.
12. Workshop on 'Holomorphic Dynamics - Hyperbolic Horizons' at Sominstationen, Holbaek, Denmark from September 25 to September 28, 2014.
13. Workshop on 'Perspectives on Parabolic Points in Holomorphic Dynamics' at Banff International Research Station, Banff, Canada from March 29 to April 03, 2015.
14. 'IMS XXV celebrating 25 years of low-dimensional dynamics at Stony Brook' at Stony Brook University, USA from May 8 to May 12, 2015.
15. 'Dynamical Developments: a conference in Complex Dynamics and Teichmüller theory' at Jacobs University, Bremen, Germany from August 17 to August 21, 2015.

16. 'Conference of Complex Analysis in China 2015' at Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China from October 12 to October 16, 2015.
17. 'Special Session: Holomorphic Dynamics, AMS Spring Eastern Sectional Meeting ' at Stony Brook University, NY, USA from March 19 to March 20, 2016.
18. 'North-American Workshop in Holomorphic Dynamics: celebrating John Milnor's 85th birthday', Cancun, Mexico from May 27 to June 4, 2016.
19. 'A conference in memory of Jean-Christophe Yoccoz', Paris, France from May 29 to June 01, 2017.
20. 'Workshop on New Frontiers in Complex Dynamics: From One to Several Variables' at The Fields Institute, Toronto, Canada from July 17 to July 21, 2017.
21. 'On geometric complexity of Julia sets', Bedlewo, Poland from March 18 to March 23, 2018.

SEMINAR/CONFERENCE TALKS:

1. 'Thermodynamic formalism and Hausdorff dimension of some Julia sets I', Jacobs University, Bremen, Germany, September 2012.
2. 'Thermodynamic formalism and Hausdorff dimension of some Julia sets II', Jacobs University, Bremen, Germany, September 2012.
3. Poster presentation on 'Combinatorics and topology of the multicorns', International Centre for Mathematical Sciences, Edinburgh, UK, May 2013.
4. 'Combinatorics and topology of the multicorns', Universitat de Barcelona, Spain, June 2013.
5. 'Antiholomorphic dynamics and the multicorns', Ramakrishna Mission Vivekananda University, Calcutta, India, August 2013.
6. 'Antiholomorphic dynamics and parameter spaces of polynomials', Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy, October 2013.
7. 'Non-landing parameter rays of the multicorns', Jacobs University, Bremen, Germany, March 2014.
8. 'Non-landing parameter rays of the tricorn', Universität Bremen, Germany, April 2014.
9. 'On the topological differences between the Mandelbrot set and the tricorn', Higher School of Economics, Moscow, Russia, May 2014.
10. 'On the topological differences between the Mandelbrot set and the tricorn', Banach Center Conferences, Bedlewo, Poland, July 2014.
11. 'On the topological differences between the Mandelbrot set and the tricorn', Sominstationen, Holbaek, Denmark, September 2014.
12. 'Hausdorff dimension of Julia sets on boundaries of hyperbolic components', Jacobs University, Bremen, Germany, September 2014.
13. 'The topological differences between the Mandelbrot set and the tricorn', The University of Warwick, Coventry, UK, November 2014.

14. 'The topological differences between the Mandelbrot set and the tricorn', The Open University, UK, November 2014.
15. 'Discontinuity of the straightening map in antiholomorphic dynamics', Ramakrishna Mission Vivekananda University, Calcutta, India, January 2015.
16. 'Discontinuity of the straightening map in antiholomorphic dynamics', Banff International Research Station, Banff, Canada, April 2015.
17. 'Local-global principles for polynomial parabolic germs', Jacobs University, Bremen, Germany, April 2015.
18. 'Non-landing parameter rays of the tricorn', Stony Brook University, USA, April 2015.
19. 'Antiholomorphic dynamics: umbilical cord wiggling, and discontinuity of the straightening map', Stony Brook University, USA, September 2015.
20. 'Antiholomorphic dynamics: discontinuity of the straightening map', Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China, October 2015.
21. 'Connectedness loci of complex polynomials: beyond the Mandelbrot set', Tata Institute of Fundamental Research, Mumbai, India, June 2016.
22. 'Discontinuity of straightening in antiholomorphic dynamics', University of Michigan, Ann Arbor, USA, November 2016.
23. 'Connectedness loci of complex polynomials: beyond the Mandelbrot set', Indian Institute of Science Education and Research, Kolkata, India, January 2017.
24. 'Dynamics of Schwarz reflections: mating polynomials with groups', Stony Brook University, USA, December 2017.
25. 'Holomorphic dynamics and Newton's method', Presidency University, Calcutta, India, January 2018.
26. 'Dynamics of Schwarz reflections: mating polynomials with groups', Banach Center Conferences, Będlewo, Poland, March 2018.
27. 'Dynamics of Schwarz reflections: mating polynomials with groups', Dynamics Seminar, The University of Rhode Island, USA, April 2018.
28. 'Dynamics of Schwarz reflections: mating polynomials with groups', Dynamics Seminar, Cornell University, USA, April 2018.
29. 'Dynamics of Schwarz reflections: mating polynomials with groups', Northwestern University, USA, May 2018.
30. 'Dynamics of Schwarz reflections: mating polynomials with groups', Tata Institute of Fundamental Research, Mumbai, India, June 2018.

PAPERS/PRE-PRINTS:

1. Orbit portraits of unicritical antiholomorphic polynomials, *Conformal Geometry and Dynamics of the AMS*, 19:35–50, 2015, available online at <http://www.ams.org/journals/ecgd/2015-19-03/S1088-4173-2015-00276-3/>.

2. Non-landing parameter rays of the multicorns (joint work with Hiroyuki Inou), *Inventiones Mathematicae*, 204(3):869–893, 2016, available online at <http://link.springer.com/article/10.1007/s00222-015-0627-3>.
3. Rational parameter rays of multibrot sets (joint work with Dierk Schleicher and Dominik Eberlein), *Dynamical Systems, Number Theory and Applications*, chapter 3, pages 49–84, World Scientific, 2016, available online at http://dx.doi.org/10.1142/9789814699877_0003.
4. On Multicorns and Unicorns II: bifurcations in spaces of antiholomorphic polynomials (joint work with Dierk Schleicher and Shizuo Nakane), *Ergodic Theory and Dynamical Systems*, 37:859–899, 2017, available online at http://journals.cambridge.org/abstract_S0143385715000656.
5. Parabolic arcs of the multicorns: real-analyticity of Hausdorff dimension, and singularities of $\text{Per}_n(1)$ curves, *Discrete and Continuous Dynamical Systems-A*, 37:2565–2588, 2017, available online at <http://www.aims sciences.org/article/doi/10.3934/dcds.2017110>.
6. Antiholomorphic perturbations of Weierstrass Zeta functions and Green’s function on tori (joint work with Konstantin Bogdanov, Khudoyor Mamayusupov, and Dierk Schleicher), *Nonlinearity*, 30:3241–3254, 2017, available online at <https://doi.org/10.1088/1361-6544/aa79cf>.
7. A rigidity result for some parabolic germs (joint work with Luna Lomonaco), to appear in *Indiana University Mathematics Journal*, available online at <https://www.iuj.indiana.edu/IUMJ/Preprints/7459.pdf>.
8. Discontinuity of straightening in antiholomorphic dynamics (joint work with Hiroyuki Inou), submitted, available online at <https://arxiv.org/abs/1605.08061>.
9. Invisible tricorns in real slices of rational maps (joint work with Russell Lodge), submitted, available online at <https://arxiv.org/abs/1710.05071>.
10. On the support of the bifurcation measure of cubic polynomials (joint work with Hiroyuki Inou), submitted, available online at <https://arxiv.org/abs/1806.04852>.
11. The circle and the cardioid I: the dynamics of Schwarz reflections (joint work with Seung-Yeop Lee, Mikhail Lyubich, and Nikolai Makarov), in preparation.
12. The circle and the cardioid II: the parameter plane (joint work with Seung-Yeop Lee, Mikhail Lyubich, and Nikolai Makarov), in preparation.

ORGANIZATION/OUTREACH ACTIVITIES:

1. Member of the local organizing committee of ‘Modern Mathematics - International Summer School for Students’, Jacobs University Bremen, July 2013.
2. Member of the local organizing committee and the jury of ‘6th International Tournament of Young Mathematicians’, Jacobs University Bremen, July 2014.
3. Member of the local organizing committee of ‘Modern Mathematics - International Summer School for Students’, Jacobs University Bremen, July 2015.
4. Member of the local organizing committee of ‘Modern Mathematics - International Summer School for Students’, Jacobs University Bremen, July 2017.
5. Organizer of the weekly dynamics seminar at Stony Brook University, Spring 2017-Spring 2018.

6. Instructor at Mathematics summer camp, Stony Brook University, July 2017.
7. Workshop co-instructor (with Mikhail Lyubich) at Sigma Camp 2017, Connecticut, August 2017.

REFERENCES:

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