SOUMYA GANGULY

CONTACT INFORMATION	9192 Regents Road, #H La Jolla, CA 92037	*Phone:* +1-858-405-3101 *E-mail:* s1gangul@ucsd.edu

RESEARCH INTERESTS

- Several Complex Variables, Complex Geometry, Partial Differential Equations
- Mathematical Physics

EDUCATION

Ph.D in Mathematics, Fall 2020 - Present
Department of Mathematics, University of California, San Diego
PhD advisor: *Prof. Peter Ebenfelt*
PhD Co-advisor: *Prof. Ming Xiao*
Qualifying Exams: *Complex Analysis, Real Analysis, Algebraic Topology, Applied Algebra* (highest level pass in all of them).
Current GPA - 4.00/4.00

M.S in Mechanical Engineering, Fall 2018 - Fall 2020
Department of Mechanical and Aerospace Engineering, University of California, San Diego
GPA - 4.00/4.00

Bachelor of Engineering, 2017
Indian Institute of Engineering Science and Technology, Shibpur (IIESTS), India

- Major: Mechanical Engineering, GPA - 9.46/10

AWARDS AND FELLOWSHIPS

- *James B Ax. Fellowship* from Department of Mathematics, UC San Diego in Fall, 2020.
- *Jawaharlal Nehru Memorial Fund* Merit award in the year 2018
- Award for excellence in Fluid Mechanics of GAABESU for the academic year 2017-18
- *DAAD WISE Scholarship* - Internship in Karlsruhe Institute for Technology, Germany, 2016
- Selection in *MITACS GLOBALINK Research Fellowship, 2016*
- *Indian Academy of Science (IAS) Summer Reseach Fellowship*- Internship in Institute of Physics, Bhubaneswar, 2015

SCHOLASTIC ACHIEVEMENTS

- First Rank in India in the entrance examination for 'Masters in Physics', held by Delhi university on July 4, 2017
- Institute Silver Medal for securing Departmental Rank 1 in B.E, Mechanical Engineering,2017

INTERNSHIPS

DAAD Fellowship   **May-August 2016**
Institute for Theoretical Particle Physics(TTP), Karlsruhe Institute for Technology(KIT)

- *Advisor:* Prof. Dr. Ulrich Nierste
- *Title:* Predicting B and D meson decays with SU(3) Symmetry.
- *Objective:* The project was expected to pursue the idea of relating different decays, especially "Two-body decays" into one pseudoscalar and one vector meson by the use of SU(3) symmetry.
- *Individual Role:* Attended courses and tutorials on 'Quantum Mechanics I and II', 'Quantum Field Theory I', and 'Quantum Chromodynamics / Introduction to Flavour physics'

Indian Academy of Science Summer Research Fellowship   **May-July 2015**
Institute of Physics(IOP), Bhubaneswar, India.

- *Advisor:* Prof. Sudhakar Panda, Director, Institute of Physics and NISER, Bhubaneswar.
- *Title:* Special relativity and transformation properties of different fields under Lorentz transformation, Discrete Symmetry Group, Quantization.
- *Objective:* To study special relativity, relativistic quantum mechanics, introductory quantum field theory and calculate relations between mathematical quantities used in the relevant topics.

- *Individual Role:* Calculation of non-commutativity of boosts in two different directions, getting the spinor and space time boosts from the Lorentz algebra, obtaining metrics of different spaces from the relation with the boost and rotation matrices.

OTHER ACADEMIC PROJECTS	**UNDERGRADUATE THESIS: Nonlinear Dynamics of Modified Van der Pol Equation**

- *Advisor:* Prof. Shyamal Chatterjee   **September 2016-July 2017**
- *Location:* Department of Mechanical Engineering, IIEST, Shibpur.
- *Team Size:* 3
- *Objective:* To modify Van der Pol equation by inserting 3rd and 5th order frictional terms in it.
- *Individual Role:* System Analysis, Simulation, Bifurcation analysis for both autonomous and non-autonomous cases.

Nonlinear Analysis of Kapitza Pendulum

- *Advisor:* Prof. Soumitro Banerjee   **May 2017-August 2018**
- *Location:* Department of Physics, Indian Institute of Science, Education and Research(IISER), Kolkata.
- *Objective:* To analyze the forced inverted pendulum and analytically obtain the stability conditions along with the bifurcation diagrams and the chaotic behavior at low excitation frequencies.
- *Individual Role:* Simulation of the model, analysis of the system and correlating the model and simulation. Study of Bifurcation(s) possible and Basins of Attraction. Wrote a robust MATLAB code for creating basins of attraction of any ODE driven dynamical system.

SELECTED GRADUATE COURSES

- Differential Geometry I-II, Several Complex Variables, Lie Groups,
- Partial Differential Equations I-II-III, Functional Analysis I-II
- Graduate Real Analysis I-II-III, Graduate Complex Analysis I-II-III, Graduate Probability Theory I-II-III,
- Applied Algebra I-II-III, Algebraic Topology I-II-III, Algebraic Geometry I-
- Nonlinear Systems, Nonlinear Control, Optimal Control, Optimal Estimation, Linear Systems Theory

TA-SHIP EXPERIENCE

- Graduate Complex Analysis (Math 220A-)
- Complex Analysis (MATH 120 A-B), Vector Calculus (MATH 20C and MATH 20E)
- Computational Methods for Engineers (MAE 107), Spacecraft Guidance I (MAE 180A)

WORKSHOPS ATTENDED

Third AFOSR Monterey Workshop on Computational Issues in Nonlinear Control

COMPUTER SKILLS

- *Programming/Analytical Languages:* C, MATLAB, MATHEMATICA.
- *Graphics and Modelling Softwares:* AutoCAD, Solidworks.
- *Technical Writing:* LaTeX.

PROFESSIONAL MEMBERSHIPS

- Member of the Indian Society for Heating, Refrigerating and Air-Conditioning (ISHRAE) from January, 2017.

EXTRACURRICULAR ACTIVITIES

- Effectively arranged and organized an intra-departmental event "IMPETUS" in Department of Mechanical Engineering, IIEST, Shibpur in January, 2016. .
- Attended and got certification from a theatre workshop under 'National School of Drama, New Delhi', 18th May - 7th June, 2008.
- Was the Distinction level certificate holder in Fine arts by 'Sarbabharatiya Sangeet-O- Sanskriti Parishad, Kolkata' in the years 2003, 2005, 2006, 2007 and 2009.

PERSONAL INTERESTS

Travel, Chess, Sketch, Flute, Physics, Bengali-Sanskrit Literature.