

Sonakshi Sachdev

- CONTACT INFORMATION Chennai Mathematical Institute *Phone:* +91-7395933781
Plot H1 SIPCOT IT Park, Siruseri *E-mail:* sonakshi@cmi.ac.in
Kelambakkam, 603103, India
- EDUCATION Chennai Mathematical Institute (CMI)
- Research scholar working towards Ph.D in Theoretical Physics (2015-present). Advisor: [Govind S. Krishnaswami](#).
 - M.Sc. in Physics, 2015.
 - B.Sc. (Hons) in Physics, 2013.
- RESEARCH INTERESTS Fluid dynamics, Plasma physics and Nonlinear dynamics.
- PAPERS
1. *Conservative regularization of compressible dissipationless two-fluid plasmas*, [Govind S Krishnaswami](#), [Sonakshi Sachdev](#) and [A Thyagaraja](#), *Physics of Plasmas*, **25**, 022306 (2018), [[arXiv:1711.05236](#)].
 2. *Local conservative regularization of compressible MHD and neutral flows*, [Govind S Krishnaswami](#), [Sonakshi Sachdev](#) and [A Thyagaraja](#), *Physics of Plasmas*, **23**, 022308 (2016), [[arXiv:1602.04323](#)].
 3. *Nonlinear dispersive regularization of inviscid gas dynamics*, [Govind Krishnaswami](#), [Sachin Phatak](#), [Sonakshi Sachdev](#) and [A Thyagaraja](#), *AIP Advances* 10, 025303 (2020), [[arXiv:1910.07836](#)].
- EXPOSITORY
1. *Algebra and Geometry of Hamilton's quaternions*, [Govind S Krishnaswami](#) and [Sonakshi Sachdev](#), *Resonance*, **21**, 6, June 2016, [[arXiv:1606.03315](#)].
- AWARDS AND HONORS
- CMI Research Fellowship, Awarded by Chennai Mathematical Institute, 2013-present.
- GRANTS
- International Travel Support grant awarded by SERB to travel to France, Govt. of India (2019).
- SCHOOLS & WORKSHOPS
- SERB school on Nonlinear Dynamics, Savitribai Phule Pune University, India (Jan 2018).
 - “The multiple approaches to plasma physics from laboratory to astrophysics School” in Ecole de Physique des Houches, Les Houches (France) (May 2019).
 - EMS School in Applied Mathematics, “Mathematical Aspects of fluid flows”, Kačov, Czech Republic, (May 2019).
- PRESENTATIONS
- *Conservative regularization of ideal fluids and plasmas*, IPR (January, 2020).
 - *Korteweg-type nonlinear dispersive regularization of gas dynamics*, Conference on Nonlinear Systems and Dynamics in IIT Kanpur (Dec 2019).
 - *Conservative regularization of ideal fluids and plasmas*, IISc (Sept., 2019).

- *Conservative regularization of ideal fluids and plasmas*. School on Plasma physics at Ecole de Physique des Houches, Les Houches (France) (May 2019). The talk won second prize.
- *Conservative regularization of ideal fluids and plasmas*, EMS School in Applied Mathematics, Mathematical Aspects of fluid flows, Kačov, Czech Republic, (May 2019).
- *KdV-type nonlinear dispersive regularization of gas dynamics*, CMI (April 2019).
- *Local conservative regularization of ideal flows and MHD*, Poster at Conference on Nonlinear Systems and Dynamics in Jawaharlal Nehru University, New Delhi (Oct 2018).
- *Heirarchy of plasma models and their regularization*, CMI (Oct, 2017).
- *Conservative regularization of compressible fluid and MHD equations*, M.Sc. Thesis, CMI (May, 2015).
- *Rigid body dynamics on its configuration manifold*, B.Sc. Thesis, CMI (April, 2013).

PAST RESEARCH EXPERIENCE • Summer 2014 at Raman Research Institute, Bengaluru with *Prof. Joseph Samuel*. We read the paper ‘A “Gaussian” for diffusion on the sphere’, [[arXiv:1303.1278](https://arxiv.org/abs/1303.1278)].

• Summer 2013 at IISER Trivandrum with *Prof. Shankaranarayanan S*. We read the paper ‘Teleparallel dark energy’, [[arXiv:1109.1092](https://arxiv.org/abs/1109.1092)].

• Summer 2012 at Chennai Mathematical Institute with *Prof. Govind S Krishnaswami* on coherent states as minimal uncertainty states.

• Summer 2011 at IGCAR, Kalpakkam with *Prof. Subramanian Natarajan*. (a) Calculated Planck’s constant and verified Stefan-Boltzmann Law. (b) Studied how carbon morphs under high pressure using a Diamond Anvil Cell.

• Winter 2011 at IGCAR, Kalpakkam with *Prof. Ramalingam Rajaraman*. Analyzed the Gamma Ray spectrum of Na-22 and Cs-137 using NaI and Germanium detector for photo peaks.

TEACHING Assisted my supervisor in preparing course notes for

- (1) Elasticity (M.Sc.), Spring 2018
- (2) Thermal Physics (B.Sc.), Autumn 2016
- (3) Introduction to Fluid Mechanics, National Workshop, Moodbidri, Spring 2016

Teaching Assistant for Classical Mechanics II (B.Sc.), Spring 2016
Instructor: Prof. Govind Krishnaswami.

ADDITIONAL SKILLS Programming in Mathematica. Developing numerical schemes for solving (nonlinear) partial differential equations.