

Himalaya Senapati

- CONTACT INFORMATION** Chennai Mathematical Institute *Phone:* +91-8280549937
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Kelambakkam, 603103, India *Website:* www.cmi.ac.in/%7Ehimalay
- 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** Nonlinear dynamics & Chaos, Dynamical systems, Mathematical Physics.
- PAPERS**
1. *Classical three rotor problem: periodic solutions, stability and chaos*, G. S. Krishnaswami and H. Senapati, *Chaos* **29** (12), 123121 (2019) (Editor's pick, Featured article). [arXiv:1811.05807](#).
 2. *Stability and chaos in the classical three rotor problem*, G. S. Krishnaswami and H. Senapati, *Indian Academy of Sciences Conference Series* **2**(1), 139-143 (2019). [arXiv:1810.01317](#).
 3. *Curvature and geodesic instabilities in a geometrical approach to the planar three-body problem*, G. S. Krishnaswami and H. Senapati, *J. Math. Phys.* **57**, 102901 (2016) (Featured Article). [arXiv:1606.05091](#).
- EXPOSITORY**
1. *An introduction to the classical three-body problem: From periodic solutions to instabilities and chaos*, G. S. Krishnaswami and H. Senapati, *Resonance* **24**, 87-114 (2019). [arXiv:1901.07289](#).
- CHAPTERS** Three chapters in "Eighteen Essays in Non-Euclidean Geometry", Eds. V. Alberge and A. Papadopoulos, European Mathematical Society Publishing House, Zurich (2019):
1. *On a theorem of Lambert: Medians in spherical and hyperbolic geometries*, H. Senapati, pp. 57-65. [doi:10.4171/196-1/4](#).
 2. *Inscribing a triangle in a circle in spherical geometry*, H. Senapati, pp. 67-79. [doi:10.4171/196-1/5](#).
 3. *Monotonicity in spherical and hyperbolic triangles*, H. Senapati, pp. 81-91. [doi:10.4171/196-1/6](#).
- PREPRINTS**
1. *Ergodicity, mixing and recurrence in the three rotor problem*, G. S. Krishnaswami and H. Senapati (2019). [arXiv:1910.04455](#) [nlin.CD].
- AWARDS AND HONORS**
- **CMI Research Fellowship**, Awarded by Chennai Mathematical Institute, 2013-present.
 - **KVPY Fellowship**, Awarded by Department of Science & Technology, Govt. of India, 2008-2013.
 - **Best Poster Presentation** award at the Conference on Nonlinear Systems and Dynamics, IIT Kanpur, 2019.
 - **National Child Award for Exceptional Achievement**, Awarded by Department of Women & Child Development, Govt. of India in 2008.
 - **Silver Medal in XII International Astronomy Olympiad**, 2007.

- Selected among top 30 students in the **Indian National Mathematics Olympiad**, 2007,'08,'09,'10.
- Selected among top 30 students in the **Indian National Astronomy Olympiad**, 2007,'08,'09,'10.
- Qualified Zonal Informatics Olympiad, 2009.

TRAVEL
GRANTS

- International Travel Support grant awarded by SERB, India (2017).
- Oberwolfach Leibniz Graduate Students grant awarded by MFO, Germany (2018).

SCHOOLS &
WORKSHOPS

- Statistical Physics of Machine Learning, Jan 6-10, 2020 (ICTS, Bengaluru).
- Conference on Nonlinear Systems and Dynamics, Dec 12-15, 2019 (IIT Kanpur).
- CIMPA school on Finsler geometry and applications, Dec 5-15, 2019 (BHU, Varanasi).
- Workshop on Data Analysis and Machine Learning, May 24-28, 2019 (IISER Tirupati).
- Workshop on Topological Dynamics, Number Theory and related areas, Jan 3-13, 2019 (RKMVERI, Belur Math).
- Recent trends in Teichmuller theory and Mapping class groups, Sep 2-8, 2018 (MFO, Oberwolfach).
- SERB School on Nonlinear dynamics, Jan 2-29, 2018 (SPPU, Pune).
- Geometry, Groups and Dynamics, Nov 6-24, 2017 (ICTS, Bengaluru).
- Probabilistic and statistical methods for networks, Aug 21 - Sep 1, 2017 (BMS Summer School, Berlin).

TEACHING

Teaching assistant to my supervisor for Thermal Physics and Nonlinear Dynamics courses.

TALKS

Poster presentation on *Ergodicity, mixing and recurrence in the classical three rotor problem* at CNSD, IIT Kanpur (Dec 2019). IPA colloquium on *Instabilities and chaos in the three rotor problem* at BHU Varanasi (Dec 2019). Poster presentation on *Instabilities, chaos and ergodicity in the classical three rotor problem* at IISER Tirupati (April 2019). Seminars at CMI on '*Periodic orbits and stability in the classical three-rotor problem*' (Jan 2019), '*A geometrical approach to the classical three body problem*' (Oct 2017), '*Classical Three Body Problem and Stability Analysis*' (May 2015) and '*2D Ising Model: Analytic and Numerical approaches*' (Apr 2013).

PAST
RESEARCH
EXPERIENCE

- *Classical three body problem and stability analysis* with G S Krishnaswami (M.Sc. Thesis, 2015).
- *2D Ising Model: Analytic and Numerical approaches* with G S Krishnaswami (B.Sc. Thesis, 2013).
- *Renormalization group approach to Ising model* with G S Krishnaswami (May 2012).
- *Experimental rheology on macro and micro gels* with B V R Tata, *Mossbauer Spectroscopy of Fe⁵⁷* with R Govindaraj and *Gamma Ray Spectroscopy* with R Rajaraman at IGCAR, Kalpakkam (2011).
- *Pulsar Emission Properties* with Dipanjan Mitra, NCRA, Pune (December 2010).

OTHERS

- Participated as an organizational member of the Academic team in the 10th International Olympiad on Astronomy and Astrophysics, Bhubaneswar, December 2016.
- Taught at winter camps for children selected in Rural Mathematics Talent Search, Odisha, 2010,'11,'2012.