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Present Position Research Assistant Professor Sep. 2022 –
Department of Physics,
University of Massachusetts Boston.

Previous Position Post-doctoral Research Associate Sep. 2020 – Aug. 2022
Project - *Classical speed limits*
Advisor - [Prof. Jason R. Green](#)
University of Massachusetts Boston.

Visiting Scientist (Post-doc) Nov. 2017 – Jan. 2020
Project - *Transport in higher dimensional chaotic systems*
Advisor - [Prof. Dr. Arnd Bäcker](#)
Max Planck Institute for the Physics of Complex Systems
and Technical University Dresden.

Date of Birth Feb. 06, 1990. (Citizenship India)

Academic PhD in Physics Jan. 2012 – Feb. 2018
Qualifications Indian Institute of Technology Madras,
Chennai (India).
Thesis - *Studies on impurity dynamics, transport, and synchronization in nonlinear dynamical maps*
Advisor - [Prof. Neelima M. Gupte](#)

M.Sc. Physics Ist Div. with Distinction 2009 – 2011
Patna University, Patna (India).

B.Sc. (Honors) Physics Ist Div. with Distinction 2006 – 2009
Subsidiary subjects : Mathematics & Statistics
Patna Science College, Patna (India).

Publications Working papers:
3. **Swetamber Das** and Jason Green (2024). Norm preserving dynamics to generalize Liouville's equation for deterministic systems.
2. Walter B. Lai, **Swetamber Das** and Jason Green (2024), Protein folding speed limits from dissipation.
1. Mohamed Sahbani, **Swetamber Das** and Jason R. Green (2024). On classical density matrix for phase space compressibility of non-Hamiltonian systems.

In review:
1. **Swetamber Das** and Jason R. Green (2024). *Spectral bounds on Lyapunov exponents and entropy production in differentiable dynamical systems.*

Published/Accepted:
13. **Swetamber Das** and Jason R. Green (2024). *Maximum speed of dissipation, [arXiv preprint](#). to appear as **Phys. Rev. E (Letter) IF: 2.7***

12. Wyeth S. Gibson, Justin T. Mulvey, **Swetamber Das***, Serxho Selmani, Jovany G. Merham, Alex Rakowski, Eric Schwartz, Allon I. Hochbaum, Zhibin Guan, Jason R. Green, and Joseph P. Patterson (2024), *Observing the dynamics of an electrochemically driven active material with liquid electron microscopy, to appear in ACS Nano*. **IF: 17.1** (*lead theory support).
11. Mohamed Sahbani, **Swetamber Das** and Jason R. Green (2023). *Classical Fisher information for differentiable dynamical systems*, *Chaos* **33**, 103139. **Featured Article**. **IF: 3.7**
10. **Swetamber Das** and Jason R. Green (2023). *Speed limits on deterministic chaos and dissipation*, *Phys. Rev. Res. (Letter)* **5**(1):L012016. **IF: 4.2**
9. **Swetamber Das** and Jason R. Green (2022). *Density matrix formulation of dynamical systems*. *Phys. Rev. E* **106**, 054135. **IF: 2.7**
8. **Swetamber Das** and Sandeep Choubey (2020). *Tunability enhancement of gene regulatory motifs through competition for regulatory protein resources*. *Phys. Rev. E* **102**, 052410. **IF: 2.7**
7. **Swetamber Das** and Arnd Bäcker (2020). *Power-law trapping in the volume-preserving Arnold-Beltrami-Childress Map*. *Phys. Rev. E* **101**, 032201. **IF: 2.7**
6. **Swetamber Das** (2019) Controlling synchronization in coupled area-preserving maps using stickiness [arXiv:1810.01364v2](https://arxiv.org/abs/1810.01364v2) (accepted in AIP Advances; unpublished due to lack of funds).
5. **Swetamber Das** and Neelima Gupte (2017), *Transport, diffusion, and energy studies in the Arnold-Beltrami-Childress map*. *Phys. Rev. E* **96**, 032210. **IF: 2.7**
4. **Swetamber Das**, Sasibhushan Mahata, and Neelima Gupte (2017). *Synchronization, phase slips and coherent structures in area-preserving maps*. *Indian Academy of Sciences Conference Series* **1**, 205-212.
3. Sasibhushan Mahata, **Swetamber Das**, and Neelima Gupte (2016). *Synchronization in area-preserving maps: Effects of mixed phase space and coherent structures*. *Phys. Rev. E* **93**, 062212. **IF: 2.7**
2. **Swetamber Das** and Neelima Gupte (2014). *Dynamics of impurities in three-dimensional-volume preserving map*. *Phys. Rev. E* **90**, 012906. **IF: 2.7**
1. **Swetamber Das** (2010). *On an Asymptotic Case of the Complex Lorenz Model*. Proceedings of International Conference on Applied Physics & Mathematics, Kuala Lumpur, Malaysia (May 7–10, 2010), 579-583. **Published by IEEE**.

Academic Honours

<i>Visitors Program fellowship</i> Max Planck Institute for the Physics of Complex Systems, Dresden (Germany).	Oct 2017 – Jan 2020
<i>DST-DFG Young Researcher</i> (Physics), 60th Lindau Meetings of Nobel Laureates 2010, Lindau (Germany).	June 27 – July 02, 2010
<i>National Initiative on Undergraduate Science (NIUS) Scholar</i> , Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai (India).	2007 – 2009
<i>Indian Science Academies' Summer Research Fellowship</i> IUCAA, Pune (India).	Summer 2008

Student supervision	Currently co-supervising three PhD students at UMass Boston Mohamed Sahbani, Sepideh Ein Moghassemi, and Walter Lei.	
Outreach Activities	Public Talk (with Erez Aghion): Can you predict the future better than a machine? The UMass Boston STEM Day.	April 19, 2023
	Senior Assistant Editor Scholarpedia - the peer-reviewed open-access encyclopaedia. Contributed to " Encyclopedia of Touch "	2014 – 2017
	Editor, IMMERSE The IIT Madras Research Magazine.	2015 – 2016
	Organizing Committee (IIT Madras): An Open Day on Optics Research Scholars' Day An Open Day on Chaos	2016 2015 2013
	Resource person: National Children's Science Congress Tamilnadu Science Forum, Chennai (India).	2014
Teaching	Graduate teaching assistant for theory and experiment courses (Jan. 2012 - Jan. 2017) Numerical Methods & Programming, Advanced Dynamical Systems, Advanced Statistical Physics, Physics I and II, Physics Laboratory I.	
Computational Tools	Extensive usage of Python, MATLAB, GitHub, and others.	
Reviewer	Physical Review, Physics Letters A, International Journal of Bifurcation and Chaos	
Talks, Conferences & School Attended	Talks: 12. Invited talk Indian Institute of Technology Bombay Mumbai (India). 11. Invited talk National Institute of Science Education & Research Bhubaneswar (India). 10. Invited talk Indian Institute of Technology Bhubaneswar Bhubaneswar (India). 9. Invited talk Indian Institute of Technology Patna Patna (India). 8. Contributed Presentation New England Complex Fluids Meeting, Brandeis University, Waltham.	Dec. 7, 2023 Dec. 5, 2023 Dec. 4, 2023 Nov. 22, 2023 Sep. 22, 2023

7. Invited talk Sep. 13, 2022
Complex Systems & Dynamics,
IIT Madras, Chennai.
6. Contributed talk, March 17, 2022
APS March meeting Chicago.
5. Contributed talk, March 16, 2021
APS March meeting (Virtual)
4. Table talk, GBASM meeting Oct. 24, 2021
Northeastern University, Boston.
3. APS March Meeting 2021 March 15–19, 2021
USA.
2. Invited talk, Feb. 28, 2019
Department of Physics, IIT Madras, Chennai.
1. Perspectives in Nonlinear Dynamics 2016, July 21 – 24, 2016
Humboldt University, Berlin.

Posters:

6. DPG Spring Meeting Regensburg March 31 - April 4, 2019
Universität Regensburg,
Regensburg (Germany).
5. DPG Spring Meeting March 11 – 16, 2018
Technical University Berlin,
Berlin (Germany).
4. Dynamics Days 2017 Jan. 4 - 6, 2017
Silver Spring,
Maryland (USA).
3. Conference on Nonlinear Systems and Dynamics Dec. 16 – 18, 2016
Indian Institute of Science Education & Research Kolkata
Kolkata (India).
2. Dynamics Days Asia-Pacific 08 July 21 – 24, 2014
IIT Madras and The Institute of Mathematical Sciences,
Chennai (India).
1. Perspectives in Nonlinear Dynamics 2013 July 15 – 18, 2013
University of Hyderabad,
Hyderabad (India).

Participation:

3. 4th Dresden-Leipzig Dynamics Day Nov. 03, 2017
Max-Planck-Institut für Mathematik,
Leipzig (Germany).
2. Complex System Approach to Self-Organization Feb 1 – 5, 2016
Indian Institute of Technology Madras,
Chennai (India).
1. DST - SERC School on Nonlinear Dynamics Nov 30 – Dec. 22, 2012
S. N. Bose National Center for Basic Sciences,
Kolkata (India).

References

[Prof. Neelima M. Gupte](#)
Professor (Emerita),
Department of Physics,
Indian Institute of Technology Madras,
Chennai (India).

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[Prof. Dr. Arnd Bäcker](#)
Professor,
Institute for Theoretical Physics,
Technische Universität Dresden,
Dresden (Germany).

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[Prof. Jason R. Green](#)
Associate Professor,
Department of Chemistry,
University of Massachusetts Boston,
Boston (USA).

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