

## Anshul Choudhary

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CONTACT INFORMATION	Riddick Hall 2401 Stinson Dr Raleigh, NC 27607	<a href="mailto:achoudh7@ncsu.edu">achoudh7@ncsu.edu</a> <a href="https://anshu957.github.io">https://anshu957.github.io</a>
RESEARCH INTERESTS	Chaos and machine learning, nonlinear dynamics, theoretical ecology, synchronization, complex networks, nano-materials.	
EDUCATION	<b>Indian Institute of Science Education and Research</b> , Mohali, India  Ph.D., Physics, <i>Awarded</i> : March 2016 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Dynamics on Complex Networks</i></li><li>• Advisor: Sudeshna Sinha, Ph.D</li></ul> <b>Netaji Subhas Institute of Technology</b> , Delhi, India  B.E., Manufacturing Processes and Automation Engineering , May 2009 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Synthesis and characterization of ZnO- Graphene Nano-composites</i></li><li>• Advisors: Rajesh Purohit, Ph.D and Renu Pasricha, Ph.D</li></ul>	
SKILLS	Programming and Scripting Languages <ul style="list-style-type: none"><li>• C, C++, SQL, LaTeX, Python (numpy, pandas, scikit-learn, NetworkX, graph-tool), MATLAB, XPP-AUTO.</li></ul>	
RESEARCH EXPERIENCE	<b>Postdoctoral Researcher</b> May, 2019 to Present Nonlinear Artificial Intelligence Lab Dept of Physics, NCSU Supervisor: William Ditto, PhD <b>Postdoctoral Researcher</b> July, 2016 to Dec, 2018 Department of Physics of Complex Systems, ICBM, University of Oldenburg, Germany Supervisor: Ulrike Feudel, PhD <b>Research Fellow</b> Aug 2011 to Feb 2016 Department of Physical Sciences, IISER Mohali Supervisor: Sudeshna Sinha, PhD <b>Research Intern</b> Jan 2009 to Aug 2009 Division of Material Characterization, National Physical Laboratory, Delhi Supervisor: Renu Pasricha, PhD	
REFEREED JOURNAL PUBLICATIONS	<ol style="list-style-type: none"><li>1. Singh, G., <b>Choudhary, A.</b>, Haranath, D., Joshi, A. G., Singh, N., Singh, S. and Pasricha, R. . “ZnO decorated luminescent graphene as a potential gas sensor at room temperature.” <i>Carbon</i>, 50:385-394, 2012.</li><li>2. Kohar, V., <b>Choudhary, A.</b>, Singh, K. P. and Sinha, S. . “Verification of scalable ultra-sensitive detection of heterogeneity in an electronic circuit.” <i>EPJ-ST</i>, 222:721-728, 2013.</li><li>3. <b>Choudhary, A.</b>, Kohar, V. and Sinha, S. . “Taming Explosive Growth through Dynamic Random Links.” <i>Scientific Reports (Nature)</i>, 4:4308, 2014.</li><li>4. <b>Choudhary, A.</b>, Kohar, V. and Sinha, S. . “Noise enhanced activity in a complex network.” <i>EPJ-B</i>, 87:1-8, 2014.</li></ol>	

5. Kohar, V., Ji, P., **Choudhary, A.**, Sinha, S. and Kurths, J. . “Synchronization in time-varying networks.” *Phys.Rev.E*, 90:022812, 2014.
6. **Choudhary, A.**, Kohar, V. and Sinha, S. . “Preventing catastrophes in spatially extended systems through dynamic switching of random interactions.” *Pramana*, 84:217-228, 2015.
7. **Choudhary, A.** and Sinha, S. . “Balance of interactions determines optimal survival in multi-species communities.” *PLoS One*, 10.1371 (2015).
8. Mitra, C., **Choudhary, A.**, Sinha, S., Kurths, J., Donner, R.V. . “Multiple-node basin stability in complex dynamical networks”. *Phys.Rev.E*, 95: 032317, 2017.
9. Rungta, P.D., **Choudhary, A.**, Meena, C., Sinha, S., “Are network properties consistent indicators of synchronization?” *EPL*, 117:20003 (2017).
10. **Choudhary, A.**, Mitra, C., Kohar, V., Sinha, S. and Kurths, J., “Small-world networks exhibit pronounced intermittent synchronization.” *Chaos (Fast Track)*, 27(11),111101 (2017).  
Highlight: Featured article in Chaos (Issue: November 2017).
11. Mitra, C., Kittel, T., **Choudhary, A.** , Kurths, J., and Donner, R. V., “Recovery time after localized perturbations in complex dynamical networks.” *New Journal of Physics*, 19(10), 103004 (2017).  
Highlight: Selected for New Journal of Physics exclusive “Highlights of 2017” collection.
12. Chaurasia, S.S., **Choudhary, A.**, Shrimali, M. and Sinha, S., “Suppression and Revival of Oscillations through Time-varying Interaction”. *Chaos, Solitons and Fractals*, *In press* (2019)

#### PREPRINT

1. **Choudhary, A.**, Lindner, J. F., Holliday, E. G., Miller, S. T., Sinha, S., Ditto, W. L. (2019). Physics enhanced neural networks predict order and chaos. arXiv preprint arXiv:1912.01958.
2. **Choudhary, A.**, Saha, A., Krueger, S., Finke, C., Rosa Jr., E., Freund, J.A., Feudel, U., “Weak-Winner Phase Synchronization”. Under review (2018).
3. Dutta, P.S., Ramesh, A., Kooi, B., **Choudhary, A.**, Feudel, U., “Trait Dissimilarity Predicts Effects of Biodiversity on Biomass Production”. Under review (2018).
4. **Choudhary, A.** and Feudel, U., “Clustering in trait space leads to co-existence in a community competing for limited resources” (2018).
5. **Choudhary, A.**, Ramesh, A., Dutta, P.S., Feudel, U., “Role of dispersal and nutrient heterogeneity in maintaining supersaturation state in a metacommunity” (2018).

#### AWARDS

##### Travel Awards

- School on Hands-on Research in Complex Systems  
by ICTP, Trieste, Italy June 2014.
- Visiting Research fellow at Potsdam Institute for Climate Impact and Research,  
Potsdam, Germany July-Sept 2014

	Academic Awards	
	<ul style="list-style-type: none"> <li>• Cleared National level exams(GATE, CSIR-UGC-NET, JEST, TIFR) for various fellowships for pursuing graduate studies Aug 2011</li> <li>• Best Poster Presentation, Conference on Nonlinear Systems and Dynamics, IISER Mohali 13-15 March 2015</li> </ul>	
PRESENTATIONS	<b>Oral Presentation</b>	
	<ul style="list-style-type: none"> <li>• 3rd Physics informed machine learning, Santa fe, NM, USA Jan 2020</li> <li>• SIAM Conference on Applications of Dynamical Systems, Utah, USA May 2017</li> <li>• Dynamics Days, CURAJ, Rajasthan, India Dec 2014</li> <li>• Inter IISER Physics Meet, IISER Pune, India Mar 2014</li> <li>• Conference on Nonlinear Systems and Dynamics, IIT Indore, India Dec 2013</li> <li>• Perspectives in Nonlinear Dynamics, Hyderabad, India July 2013</li> <li>• Institute of Electronics and Telecommunications Engineers, Delhi, India June 2006</li> </ul>	
	<b>Poster Presentation</b>	
	<ul style="list-style-type: none"> <li>• Conference on Condensed Matter and Biological Systems, BHU, Varanasi, India Jan 2013</li> <li>• Hands-on Research on Complex Systems, ICTP, Trieste, Italy June 2014</li> <li>• Conference on Nonlinear Systems and Dynamics, IISER Mohali Mar 2015</li> <li>• International Symposium: Recent Advances in Nonlinear Dynamics and Complex Structures, ICBM, Germany June 2017</li> </ul>	
WORKSHOP ATTENDED	<ul style="list-style-type: none"> <li>• DST SERC School on Nonlinear Dynamics, IISER Pune, India Dec 2011</li> <li>• RRI School on Statistical Physics, Bangalore, India April 2013</li> <li>• Hands-on Research in Complex Systems, Trieste, Italy June 2014</li> <li>• Winter School on Quantitative Systems Biology: Learning and Artificial Intelligence, ICTP, Italy Nov 2018</li> </ul>	
TEACHING EXPERIENCE	<p>Instructor 2017 &amp; 2018, Summer Semester</p> <p>Structure and Dynamics of Networks Department of “Theoretical Physics of Complex Systems” ICBM, University of Oldenburg.</p> <p>Teaching Assistant 2016-2017, Winter Semester</p> <p>Praktikum Modellierung(Computational Modeling using MATLAB) Department of “Theoretical Physics of Complex Systems” ICBM, University of Oldenburg.</p> <p>Teaching Assistant 2012-2013</p> <p>PHY212 - Modern Physics Lab Department of Physical Sciences, IISER Mohali.</p> <p>PHY101 - Classical Mechanics 1 Department of Physical Sciences, IISER Mohali.</p>	
INDUSTRIAL EXPERIENCE	<p>Associate Consultant, HCL-AXON Dec 2009 – July 2011</p> <ul style="list-style-type: none"> <li>• Implemented SAP modules for client’s database according to their business requirements using ABAP language.</li> </ul>	
REFERENCES	Furnished upon demand.	