

# N I R A J

## KUSHWAHA

### CONTACT INFO

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### CURRENT POSITION

**RESIDENT SCIENTIST / PHD CANDIDATE** **2021-**  
***Complexity Science Hub Vienna*** | *Josefstädter Str. 39, 1080 Vienna*  
(Supervisor: Dr. Edward D. Lee, Prof. Stefan Thurner)

- Discovering mesoscale for chains of armed conflicts
- Building dynamical models to explain population-level scaling in sessile organisms
- Joint affiliation with the Department of Physics, University of Vienna (Supervisor: Prof. Christoph Dellago)

### EXPERIENCE

**MASTER THESIS INTERN** **2019-2020**  
***Complex Systems Lab, IIT Indore*** | *Khandwa Rd, Simrol, Madhya Pradesh 453552*  
(Supervisor: Prof. Sarika Jalan)

- Worked on my master thesis for a year

**WINTER INTERN** **2018**  
***Astrophysical Sciences Division, Bhabha Atomic Research Station*** | *Anushaktinagar, Mumbai - 400 094*  
(Supervisor: Mr. Bitan Ghosal)

- Main project topic: "Synchrotron emission by charged particles in a non-uniform magnetic field"
- Minor project on data analysis of radiation data from "Major Atmospheric Cerenkov Experiment Telescope"

## EDUCATION

### MSc. in PHYSICS

2018-2020

*Indian Institute of Technology (IIT) Indore* | Khandwa Rd, Simrol, Madhya Pradesh 453552

- Thesis topic: "Engineering chimera and novel technique based on machine learning"
- Minor project on, "Crop classification using satellite imagery"
- Minor project on, "Credit card fraud detection"

### BSc. in PHYSICS (HONS.)

2015-2018

*Institute of Science- BHU* | Ajagara, Varanasi, Uttar Pradesh 221005

### High school diploma

2014

*Atomic Energy Central School* | Tarapur, India

## ACHIEVEMENTS

### National level exams

- Top 1% national level toppers (All India Rank=66) in National Graduate Physics Examination-2018
- All India Rank=432 in the national entrance exam for the Indian Institute of Technology in 2018

### Awards

- Gold medal in National Science Olympiad conducted by All India Science Teacher's Association

## PUBLICATIONS

### Articles

Kushwaha, Niraj and Edward D Lee (Aug. 2023). "Discovering the mesoscale for chains of conflict". In: *PNAS Nexus* 2.7, pgad228. issn: 2752-6542. doi: 10.1093/pnasnexus/pgad228.

Kushwaha, Niraj, Naveen Kumar Mendola, Saptarshi Ghosh, Ajay Deep Kachhvah, and Sarika Jalan (2021). "Machine learning assisted chimera and solitary states in networks". In: *Frontiers in Physics* 9, p. 513969.

## CONFERENCES

### WILHELM EXNER LECTURES

2023

*Vienna, Austria*

- Won the "Significant Milestone Award of the 2023 Exner Lectures in the category of PhD"

### THE GERMAN PHYSICS SOCIETY MEETING

2023

*Dresden, Germany*

- Gave a talk on "Population waves in sessile organisms"

### CONFERENCE ON COMPLEX SYSTEMS

2022

*Palma de Mallorca, Spain*

- Gave a talk on "Multiscale causal structure in armed conflicts"
- Presented a poster

SCHOOLS AND WORKSHOPS	<b>THE GERMAN PHYSICS SOCIETY MEETING</b> <span>2022</span>	
	<i>Regensburg, Germany</i>	
	<ul style="list-style-type: none"> <li>Gave a talk on "Multiscale causal structure in armed conflicts"</li> </ul>	
	<b>CONFERENCE ON COMPLEX SYSTEMS</b> <span>2020</span>	
	<i>Online</i>	
	<ul style="list-style-type: none"> <li>Gave a talk on "Machine Learning assisted Chimera states in Networks"</li> </ul>	
	<b>HARVARD COLLEGE US-INDIA INITIATIVE</b> <span>2017</span>	
	<i>Mumbai, India</i>	
	<ul style="list-style-type: none"> <li>Delegate</li> </ul>	
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	<b>LIPARI SCHOOL ON COMPUTATIONAL COMPLEX AND SOCIAL SYSTEMS</b> <span>2023</span>	
	<i>Lipari, Italy</i>	
	<b>LIPARI SCHOOL ON COMPUTATIONAL COMPLEX AND SOCIAL SYSTEMS</b> <span>2022</span>	
	<i>Lipari, Italy</i>	
	<b>BIGSSS SUMMER SCHOOL IN COMPUTATIONAL SOCIAL SCIENCE</b> <span>2022</span>	
	<i>Groningen, Netherlands</i>	
	<ul style="list-style-type: none"> <li>Project topic: "Dynamical reciprocity in office spaces"</li> </ul>	
	<b>THE GREAT RESIGNATION WORKSHOP</b> <span>2022</span>	
OTHER ACTIVITIES	<i>Vienna, Austria</i>	
	<b>GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN) WORKSHOP</b> <span>2018</span>	
	<i>Indore, India</i>	
	<ul style="list-style-type: none"> <li>Topic of workshop: "Network Science- from structure to dynamic"</li> </ul>	
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	<b>Volunteering work</b>	<ul style="list-style-type: none"> <li>Started an NGO with college friends at BHU to educate underprivileged kids in Varanasi</li> <li>Worked as a climate counsellor for the International Centre for Culture and Education</li> <li>Volunteer at the Buddy Project, Vielmehr für Alle! in Vienna</li> </ul>
	<b>Online Courses</b>	<ul style="list-style-type: none"> <li>"Network Dynamics of Social Behaviour" by University of Pennsylvania</li> <li>"From big bang to dark energy by Prof. Hitoshi Murayama" by University of Tokyo</li> <li>"Social Norms, Social change" by UNICEF</li> <li>"Digital media marketing" by Internshala</li> </ul>