

# Krishna Jalan

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## Research Interests

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Quantum information aspects of quantum field theory and quantum gravity, Black hole information paradox, Gauge/gravity duality.

## Education

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SEP 2020 – ....

### Ph.D. in Theoretical Physics

Institute of Mathematical Sciences, Chennai

Thesis : Black Hole Dynamics & Holography

Supervisor : [Roji Pius](#)

AUG 2014 – MAY 2019

### (Integrated) M.Sc. in Physics

National Institute of Technology, Rourkela

Thesis : Anisotropic Thermalization in Strongly Coupled Field Theory via Gauge/Gravity Duality

Supervisor : [Subhash Chandra Mahapatra](#)

## Work Experience

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SEP 2019 – DEC 2019

### Research Assistant

Gauhati University, Guwahati

Project on early universe dynamics related to inflation theory and origin of density perturbations, and dynamical dark energy under the guidance of *Dr. Sanjeev Kalita*.

AUG 2018 – MAY 2019

### Master's Student

National Institute of Technology, Rourkela

Master's thesis project on the application of gauge/gravity duality to study anisotropic signature of magnetic field on the thermalization time of quark-gluon plasma.

MAY 2018 – JUL 2018

### Summer Research Fellow

Harish-Chandra Research Institute, Prayagraj (Allahabad)

Project on dark matter particles titled *A Study of Dark Matter* under the guidance of *Prof. Biswarup Mukhopadhyaya*.

MAY 2017 – JUL 2017

### Summer Research Fellow

Jawaharlal Nehru University, Delhi

Project on neutrino oscillations titled *Phenomenology of Neutrino Oscillation* under the guidance of *Dr. Poonam Mehta*.

## Conferences/Workshops

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### Attended

1. Non-perturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography, ICTS-TIFR, Bengaluru, India, August-September 2022.
2. Quantum Field Theory in Curved Spacetimes Workshop, Online Conference, Spain, May 2022.
3. Indian Strings Meeting 2021, Online Conference, Indian Institute of Technology, Roorkee, India, December 2021.
4. All Lambdas Holography @ Prague, Online Conference, Czechia, October 2021.

5. Black Holes Inside and Out, Online Conference, Japan, September 2021.
6. Workshop on Astronomy & Astrophysics, National Institute of Technology, Rourkela, India, sponsored by Inter-University Center for Astronomy & Astrophysics, Pune, India, March 2018.
7. Workshop on General Relativity & Cosmology, Department of Physics & Astronomy, National Institute of Technology, Rourkela, India, February 2018.
8. Mathematics Training and Talent Search program (Level O), India, June 2016.

## Awards & Achievements

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- ◇ Institute Gold Medal for the Best Postgraduate with Integrated M.Sc. Degree among the natural sciences, National Institute of Technology, Rourkela, awarded in January, 2020.
- ◇ Institute Silver Medal for the Best Postgraduate with Integrated M.Sc. Degree in Department of Physics & Astronomy, National Institute of Technology, Rourkela awarded in January, 2020.
- ◇ Selected for the prestigious *Summer Research Fellowship*, awarded jointly by the academies of sciences in India (IASc-INSa-NASi), for 2 consecutive years, May - July, 2017 and 2018.
- ◇ Recipient of Academic Excellency Award, Department of Physics and Astronomy, NIT Rourkela, for 4 consecutive academic years, 2014-15, 2015-16, 2016-17 and 2017-18.
- ◇ INSPIRE Scholarship awarded by Department of Science and Technology, Government of India, to the top 1 percentile students of the country based on Higher Secondary merit, February, 2015 - May, 2019.
- ◇ Qualified **Regional Mathematics Olympiad** from the North Eastern Region of India, 2013.
- ◇ Awarded the "Certificate of Appreciation" for academic excellence in the Matriculation examination, by the Deputy Commissioner, Chirang District, Assam, India, 2012.
- ◇ Gold Medal in Mathematics Olympiad conducted by All India Schools Mathematics Teachers Association, 2011.

## Teaching Experience

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FALL 2022	<b>Teaching Assistant for Quantum Mechanics I</b> Institute of Mathematical Sciences, Chennai
SPRING 2022	<b>Teaching Assistant for General Relativity</b> Institute of Mathematical Sciences, Chennai
AUG 2017 - APR 2018	<b>Tutor at Student Counselling Program</b> National Institute of Technology, Rourkela Taught a class of about 20 students – Freshmen Physics Remedial Class.

## Skills

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TECHNICAL	<ul style="list-style-type: none"> <li>◇ OS — Linux, Windows.</li> <li>◇ CODING — C (basic), C++ (basic), FORTRAN (intermediate), Python (intermediate), Mathematica (intermediate), Maxima (basic).</li> <li>◇ DOCUMENTATION — <math>\text{\LaTeX}</math> (advanced), Office (advanced).</li> </ul>
LANGUAGES	Marwadi (mother tongue), Hindi (fluent), English (fluent), Assamese (basic), Bengali (basic), Japanese (basic), Spanish (learning).

## Non-academic Duties

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AUG 2017 – APR 2018	<b>Mentor at Student Counselling Program</b> National Institute of Technology, Rourkela Academic and non-academic guide to a group of 4 freshmen.
APR 2011 – FEB 2012	School Head-boy during high school.

## Referees

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Dr. Roji Pius  
Department of Theoretical Physics  
Institute of Mathematical Sciences, Chennai

Dr. Subhash Chandra Mahapatra  
Department of Physics & Astronomy  
National Institute of Technology, Rourkela

Email address available upon request.