

# Anjan Kar

## Curriculum Vitae

Department of Physics  
Indian Institute of Technology Kharagpur  
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### Profile

I am a PhD student at the Department of Physics, Indian Institute of Technology, Kharagpur, India. I work in Gravitational Physics under the supervision of Prof. Sayan Kar.

**Research Interest** Regular black holes, black hole shadow, gravitational lensing, quasinormal mode, perturbation, gravitational collapse and black hole thermodynamics.

### Education

- 2022 – Now **Indian Institute of Technology**, Kharagpur, India  
**Doctoral Student**, Gravitational Physics  
Advisor: *Prof. Sayan Kar*  
Thesis Title:
- 2020 – 2022 **Indian Institute of Technology**, Kharagpur, India  
**M.Sc., Physics**, CGPA: 9.12  
Advisor: *Prof. Sayan Kar*  
Thesis Title: Shadows of rotating and non-rotating black holes
- 2017 – 2020 **Vidyasagar University**, Midnapore, India  
**B.Sc., Physics**, CGPA: 8.83

### Publications

- PRD 2025 **‘New rotating Lorentzian wormhole spacetime’**.  
*Anjan Kar* Soumya Jana and Sayan Kar, [Physical Review D](#), vol. 111, no. 6, p. 064010, 2025, [arXiv:2411.09202 \[gr-qc\]](#)
- EPJC 2024 **‘Aspects of a novel nonlinear electrodynamics in flat spacetime and in a gravity-coupled scenario’**.  
*Anjan Kar*, [European Physical Journal C](#), vol. 84, no. 12, p. 1246, 2024, [arXiv:2406.10577 \[gr-qc\]](#)
- GRG 2024 **‘Novel regular black hole: geometry, source and shadow’**.  
*Anjan Kar* and Sayan Kar, [General Relativity and Gravitation](#), vol. 56, no. 5, p. 52, 2024, [arXiv:2308.12155 \[gr-qc\]](#)

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## Seminar and poster presentations

- IAGRG 2025 '**Regular black holes from a nonlinear electrodynamics free from fractional powers of  $F_{\mu\nu}F^{\mu\nu}$** ' poster presented at '*33rd Indian Association of General Relativity and Gravitation (IAGRG 2025)*' organised by BITS Pilani in January 2025 in Pilani campus, India.
- Rs day 2024 '**New regular black holes: geometry, source and shadow**' poster presented at the '**Research Scholar Day**', an event organized by the Department of Physics, Indian Institute of Technology Kharagpur (IIT Kharagpur), India in 2024.
- ICGC 2023 '**New regular black holes: geometry, matter source and shadow**' seminar presented at '*10th International Conference on Gravitation and Cosmology: New Horizons and Singularities in Gravity (ICGC 2023)*' organised by Indian Institute of Technology Guwahati (IIT Guwahati) in December 2023 in Guwahati, India.
- GrAsCo 2023 '**The regular black holes**' seminar presented at '**Gravity Astrophysics and Cosmology Seminar**', a weekly event at Indian Institute of Technology Kharagpur in April 2023.

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## Schools, conferences and workshops

- ICTS School 2025 'Beyond the Horizon: Testing the black hole paradigm (ICTS 2025)' organised by ICTS-TIFR Bengaluru in March-April 2025 in Bengaluru, India.
- IAGRG 2025 '*33rd Indian Association of General Relativity and Gravitation (IAGRG 2025)*' organised by BITS Pilani in January 2025 in Pilani campus, India.
- ICGC 2023 '*10th International Conference on Gravitation and Cosmology: New Horizons and Singularities in Gravity (ICGC 2023)*' organised by Indian Institute of Technology Guwahati (IIT Guwahati) in December 2023 in Guwahati, India.
- IAGRG school 2023 '*Indian Association of General Relativity and Gravitation (IAGRG) School on Gravitation and Cosmology 2023*' organised by 'International Centre for Theoretical Science (ICTS Bengaluru)' in October 2023 in Bengaluru, India.
- VBO workshop 2023 '*IIA Kavalur black hole workshop: Theory and observation 2023*' organised by Indian Institute of Astrophysics (IIA Bengaluru) in June 2023 in Kavalur, Tamilnadu, India.
- IAGRG school 2022 (online) '*Indian Association of General Relativity and Gravitation (IAGRG) School on Gravitation and Cosmology 2022*' organised by International Centre for Theoretical Science (ICTS Bengaluru, India) in April 2022.

## Teaching experience

Spring 2024 Condensed Matter Physics Lab (PH39202) at IIT Kharagpur  
Position: Lab Instructor

Spring 2024 BTech Physics Laboratory (PH19003) at IIT Kharagpur  
Position: Lab Instructor

Autumn 2023 Physics of Waves (PH11003) at IIT Kharagpur  
Position: Theory TA

Spring 2023 BTech Physics Laboratory (PH19003) at IIT Kharagpur  
Position: Lab Instructor

## Skills

Programing: Python, Pandas, Mathematica

Language: Bengali (native), English (fluent), Hindi (basic), German (basic)

Writing: Writing reports and other scientific documents with LATEX