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RESEARCH INTERESTS	astrophysical black holes · semi-analytic accretion-emission models · theories of gravity and black holes · exotic compact objects · formation and stability of black holes · gravitomagnetism · solution-generating techniques · causal structure · semiclassical gravity ·	
ACADEMIC HISTORY	<u>Graduate</u> <i>Department of Astronomy &amp; Astrophysics</i> <i>Tata Institute of Fundamental Research Mumbai, India</i> Ph.D. in Physics (2020) [Thesis] M.Sc. in Physics (2019)	Aug 2013 - Jul 2019
	<u>Undergraduate</u> <i>Department of Physics</i> <i>Indian Institute of Technology Madras, India</i> B. Tech. in Engineering Physics (2013)	Aug 2009 - Jul 2013
RESEARCH EXPERIENCE	<u>Postdoctoral Research</u> BHI Fellow <i>Black Hole Initiative at Harvard University, USA</i> <i>Center for Astrophysics   Harvard &amp; Smithsonian, USA</i> Postdoctoral Fellow <i>Institute for Theoretical Physics at University of Frankfurt, Germany</i> Research Scholar <i>Tata Institute of Fundamental Research Mumbai, India</i>	Sep 2022 - present  Nov 2019 - Aug 2022  Aug 2019 - Oct 2019
	<u>Research in Collaborations</u> Member <i>Fundamental Physics, next generation Event Horizon Telescope (ngEHT)</i> Member <i>Gravitational Physics Inputs, Event Horizon Telescope (EHT)</i> Member <i>BlackHoleCam</i>	Aug 2021 - present  Aug 2020 - present  Aug 2020 - present
PUBLICATIONS	<p><b>P. Kocherlakota</b>, L. Rezzolla, R. Roy, and M. Wielgus, “<i>Extreme Light Bending in Spherically-Symmetric Black Hole Spacetimes: Universal Characteristics and Strong-Field Tests of Gravity</i>” <a href="#">arXiv:2307.16841 [gr-qc]</a></p> <p><b>P. Kocherlakota</b>, R. Narayan, K. Chatterjee, A. Cruz-Osorio, and Y. Mizuno, “<i>Toward General-Relativistic Magnetohydrodynamics Simulations in Stationary Non-Vacuum Spacetimes</i>” <a href="#">arXiv:2307.15140 [astro-ph.HE]</a></p> <p><b>P. Kocherlakota</b> and L. Rezzolla, “<i>Distinguishing gravitational and emission physics in black-hole imaging: spherical symmetry</i>” MNRAS <b>513</b>, 1229 (2022); <a href="#">arXiv:2201.05641 [gr-qc]</a></p> <p><b>P. Kocherlakota</b> et al. (The EHT Collaboration), “<i>Constraints on black-hole charges with the 2017 EHT observations of M87*</i>” Phys. Rev. D <b>103</b>, 104047 (2021); <a href="#">arXiv:2105.09343 [gr-qc]</a></p>	

**P. Kocherlakota** and L. Rezzolla,  
“Accurate mapping of spherically symmetric black holes in a parameterised framework”  
Phys. Rev. D **102**, 064058 (2020); [arXiv:2007.15593 \[gr-qc\]](#)

R. Roy, **P. Kocherlakota**, and P. S. Joshi,  
“Mode stability of a near-extremal Kerr superspinner”  
[arXiv:1911.06169 \[gr-qc\]](#)

D. Dey, **P. Kocherlakota**, and P. S. Joshi,  
“A General Relativistic Approach to Small-Scale Structure Formation”  
[arXiv:1907.12792 \[gr-qc\]](#)

**P. Kocherlakota** and P. S. Joshi,  
“An Approach to Stability Analyses in General Relativity via Symplectic Geometry”  
Arab. J. Math. (2019); [arXiv:1902.08219 \[gr-qc\]](#)

R. Shaikh, **P. Kocherlakota**, R. Narayan, and P. S. Joshi,  
“Shadows of spherically symmetric black holes and naked singularities”  
MNRAS **482**, 52 (2018); [arXiv:1802.08060 \[astro-ph.HE\]](#)

**P. Kocherlakota**, P. S. Joshi, S. Bhattacharyya, C. Chakraborty, A. Ray, and S. Biswas,  
“Gravitomagnetism and Pulsar Beam Precession near a Kerr Black Hole”  
MNRAS **490**, 3262 (2019); [arXiv:1711.04053 \[astro-ph.HE\]](#)

K.-I. Nakao, P. S. Joshi, J.-Q. Guo, **P. Kocherlakota**, H. Tagoshi, T. Harada, M. Patil, and A. Królak,  
“On the stability of a superspinner”  
Phys. Lett. B. **780**, 410 (2018); [arXiv:1707.07242 \[gr-qc\]](#)

C. Chakraborty, **P. Kocherlakota**, M. Patil, S. Bhattacharyya, P. S. Joshi, and A. Królak  
“Distinguishing Kerr naked singularities and black holes using the spin precession of a test gyro in strong gravitational fields”  
Phys. Rev. D **95**, 084024 (2017); [arXiv:1611.08808 \[gr-qc\]](#)

C. Chakraborty, **P. Kocherlakota**, and P. S. Joshi,  
“Spin precession in a black hole and naked singularity spacetimes”  
Phys. Rev. D. **95**, 044006 (2017); [arXiv:1605.00600 \[gr-qc\]](#)

SELECTED  
PUBLICATIONS IN  
COLLABORATIONS

The EHT Collaboration *et al.*,  
*First Sagittarius A\* Event Horizon Telescope Results*  
“I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way”  
ApJ **930**, L12 (2022);  
“II. EHT and Multiwavelength Observations, Data Processing, and Calibration”  
ApJ **930**, L13 (2022);  
“III. Imaging of the Galactic Center Supermassive Black Hole”  
ApJ **930**, L14 (2022);  
“IV. Variability, Morphology, and Black Hole Mass”  
ApJ **930**, L15 (2022);  
“V. Testing Astrophysical Models of the Galactic Center Black Hole”  
ApJ **930**, L16 (2022);  
“VI. Testing the Black Hole Metric”  
ApJ **930**, L17 (2022)

TEACHING  
EXPERIENCE

Teaching Assistant, *Cosmology* (2021)  
Instructor: L. Sagunski  
Institute for Theoretical Physics, Goethe University, Frankfurt

Teaching Assistant, *General Relativity* (2020-21)  
Instructor: L. Rezzolla

Institute for Theoretical Physics, Goethe University, Frankfurt

Teaching Assistant, *Astronomy & Astrophysics I* (2016)

Instructor: D. Narasimha

Tata Institute for Fundamental Research, Mumbai

RECOGNITIONS      2022 EHT Early Career Award

RESEARCH TALKS    “*Light Echoes & Future Tests of Gravity*”  
[†: INVITED]      16 May, 2023; *Foundations “Duet” Talk (w. Jamee Elder)*, [2<sup>nd</sup> ngEHT History, Philosophy, & Culture Meeting](#), Black Hole Initiative at Harvard University, Cambridge<sup>†</sup>

“*Experimental Tests of Gravity with Black Hole Imaging: Status & Limitations*”  
20 Mar, 2023; *ngEHT Foundations Seminar*, Black Hole Initiative at Harvard University, Cambridge<sup>†</sup>

“*Testing the Sagittarius A\* Spacetime Metric with the 2017 EHT Observations*”  
26 Jan, 2022; *General Relativity Seminar*, CMSA, Harvard University, Cambridge<sup>†</sup>  
23 Dec, 2022; *Department Seminar*, IIT Hyderabad, Hyderabad<sup>†</sup>  
19 Dec, 2022; [32<sup>nd</sup> IAGRG Meeting](#), IISER-Kolkata, Kolkata  
14 Dec, 2022; *Young Theoretical Physicists Meet*, IIT Gandhinagar, Gandhinagar<sup>†</sup>  
8 Dec, 2022; *Department Seminar*, Tata Institute of Fundamental Research, Mumbai  
7 Dec, 2022; *Department Seminar*, International Center for Theoretical Sciences-TIFR, Bengaluru  
24 Nov, 2022; *VLBI Seminar*, Max Planck Institute for Radio Astronomy, Bonn<sup>†</sup>

“*Photon Rings in Spherically Symmetric Spacetimes and Future Tests of Gravity*”  
20 Dec, 2022; [32<sup>nd</sup> IAGRG Meeting](#), IISER-Kolkata, Kolkata  
24 Jun, 2022; [ngEHT Meeting 2022](#), Granada

“*Distinguishing Gravitational and Emission Physics in Black-Hole Imaging: Spherical Symmetry*”  
21 Jun, 2022; [EHT Meeting 2022](#), Granada

“*Tests of General Relativity and Spacetime Metric with the EHT observations of M87\**”  
29 Jun, 2022; [European Astronomical Society Meeting 2022](#), Valencia<sup>†</sup>  
17 Feb, 2022; [Recent Progress on Gravity Tests](#), Online<sup>†</sup>  
15 Jul, 2021; *Sabarmati Seminar*, IIT Gandhinagar, Gandhinagar<sup>†</sup>

“*Accurate Mapping of Spherically Symmetric Black Holes in a Parameterised Framework*”  
23 Aug, 2020; [LETHEP Seminar](#), Online<sup>†</sup>

“*Lectures on Stability in General Relativity*”  
20-23 Jul, 2019; [Student Talks on Trending Topics in Theory 2019](#), IISER Bhopal, Bhopal<sup>†</sup>

“*An Approach to Stability Analyses in General Relativity via Symplectic Geometry*”  
14 May, 2019; *Department Seminar*, Chennai Mathematical Institute, Chennai

“*Gravitomagnetism & Pulsar Beam Precession near a Kerr Black Hole*”  
21 May, 2019; *Department Seminar*, International Centre for Theoretical Sciences-TIFR, Bengaluru  
17 May, 2019; *Department Seminar*, Institute of Mathematical Sciences, Chennai  
6 July, 2018; [Marcel Grossmann Meeting 2018](#), Sapienza University, Rome  
27 Feb, 2018; *Department Seminar*, Centre for Theoretical Studies, IIT Kharagpur

ACADEMIC            Co-Lead, *ngEHT Foundations Focus Group*  
SERVICE            Member, *ngEHT Ethics Committee*  
Organiser, *Student Talks on Trending Topics in Theory 2018*

Referee, *Physical Review D*

Referee, *The Astrophysical Journal*

Referee, *Journal of Cosmology and Astroparticle Physics*

Referee, *General Relativity and Gravitation*

Referee, *European Journal of Physics C*

Referee, *Entropy*