Boris S. Kalita

boris.kalita@pku.edu.cn — kalita.boris.sindhu@gmail.com

Career in Astronomy & Astrophysics

Kavli Astrophysics Fellow **Jan 2023 – Present**
Kavli Institute for Astronomy and Astrophysics (PKU), China
Kavli Institute for the Physics and Mathematics of the Universe, Japan *Postdoctoral Prize Fellowship*

IdEx PhD Scholar **Oct 2019 – Dec 2022**
Université Paris Cité and CEA Paris-Saclay, France *PhD in Astronomy & Astrophysics*
Supervisor: Dr. Emanuele Daddi

Research Associate **May 2019 – Jul 2019**
CEA Paris-Saclay, France *Funded Research Project*
PI: Dr. Emanuele Daddi

Research Scholar **Nov 2018 – Mar 2019**
Institute for Astronomy, University of Hawaii - Manoa, USA *Funded Research project*

Education in Physics

Masters in Physics **Jul 2016 – Mar 2018**
Indian Institute of Technology - Roorkee, India
Specialization: Nuclear Physics

Bachelors in Physics **Jul 2013 – May 2016**
University of Delhi, India
Graduated with Honors

Fellowships and Grants

– NSFC grant for International Young Scientists **2026**
Funded by National Natural Science Foundation of China | 1 year (∼ $30k)

– Huizhi Reserve Program Grant **2026**
Funded by Beijing Natural Science Foundation | 2 years (∼ $30k)

– PKU Special Boya Fellowship **2026**
Funded by Peking University | 3 years (∼ $134k)

– China Postdoctoral Science Foundation Grant **2025**
Funded by China Postdoctoral Science Foundation | 2 years (∼ $12k)

– PKU Boya Fellowship **2024**
Funded by Peking University | 2 years (∼ $76k)

– Kavli Astrophysics Fellowship **2023**
Funded by the Kavli Foundation | 4 years (∼ $266k + $41k travel funds)

– IdEx PhD Grant **2019**
IdEx (Université Paris Cité) fund | 3 years (∼ $68k + $5.2k travel funds)

– Principal Investigator of 2 successful telescope proposals **2020 – Present**
Keck Telescope | 2 nights (∼ $100k cash equivalent)
VLA | 10 hours (∼ $30k cash equivalent)

– Co-Investigator of 3 successful telescope proposals **2020 – Present**
Keck Telescope, VLA, NOEMA

Invited Seminars

– CEA Paris-Saclay, Saclay, France **Jun 2025**

– **Kavli IPMU, Tokyo, Japan** **Mar 2025**
– **Newcastle University, UK (online)** **Oct 2024**
– **Observatoire de Genève, Versoix, Switzerland** **Sep 2024**
– **National Astronomical Observatory of Japan, Mitaka, Japan** **Aug 2024**
– **Laboratoire d'astrophysique de Marseille, Marseille, France** **Oct 2023**
– **INAF-Brera, Milan, Italy** **Oct 2023**
– **Inter-University Centre for Astronomy and Astrophysics, Pune, India** **Jun 2023**
– **CEA Paris-Saclay, Saclay, France** **Jun 2023**
– **Center for Astrophysics, Harvard, USA (online)** **Sep 2021**

Scientific Supervision

– **Graduate Project Co-supervision** **Mar 2024 – Present**
Zhengxin Tang (Graduate student in Wuhan University, China)
TOPIC: The systematic uncertainties of morphological fitting in JWST data

– **Undergraduate Project Supervision** **Apr 2024 – Jul 2024**
Kévin Bosseboeuf (Undergraduate in ENS Paris-Saclay, France)
TOPIC: Bulge-disk decomposition of galaxies observed with JWST

– **PhD project contribution** **2023**
Aurélien Le Bail (PhD student in CEA Paris-Saclay, France)
My work on lopsided galaxy disks with HST has led to this PhD project (with JWST)

Scientific Conference Organization

– **Co-Lead Organiser of International Workshop** **Jun 2024**
Workshop on Galaxy and Black-Hole Evolution (Kavli-IPMU, Japan)
I co-led (with John Silverman) the scientific and logistical organisation of the workshop

– **Co-Lead Organiser of International Collaboration Meeting** **Jul 2024**
COSMOS international collaboration team meeting (Kavli-IPMU, Japan)
I co-led (with John Silverman) the scientific and logistical organisation of the meeting

Collaborations

– **Member of the FMOS-COSMOS collaboration** **Jul 2024 – Present**
I am responsible for exploring the use of recently available JWST data.

– **Member of the International COSMOS collaboration** **Jan 2024 – Present**

Responsibilities

– **Referee | The Astrophysical Journal; A & A; MNRAS** **Jun 2023 – Present**
– **Co-Organizer of Astro-Lunch Seminar | Kavli-IPMU, Japan** **Oct 2023 – Feb 2025**
– **Co-Organizer of Friday Hackathon | Kavli-IPMU, Japan** **Oct 2023 – Sep 2023**
– **Organizer of Weekly Journal Club | CEA Paris-Saclay, France** **Sep 2021 – Sep 2022**

PUBLICATION LIST

Journal information: All publications have been in the three main Astrophysics Journals (MNRAS, ApJ and A&A). These are the three top Astronomy and Astrophysics journals according to Scimago Journal Rank Indicator (based on h-index).

First/lead author publications [12]

1. *SCALES. I. Bridging Lensed Clump – Giant Clump Scales in Lensed Galaxies at* $z = 1 - 4$
   Kalita, Boris S. ; Claeyssens, Adélaïde ; Ho, Luis C. ; Dessauges-Zavadsky, Miroslava ; Förster Schreiber, Natascha M. ; Daddi, Emanuele ; Silverman, John D. ; Bhadari, Naval Kishor ; Chen, Changhao ; Jiang, Fangzhou ; Wang, Ke ; Liang, Jinning ; Segovia Otero, Alvaro ; Shangguan, Jinyi
   arXiv:2610.03866 (2026) — *Submitted to ApJ*

2. *SCALES. II. The Internal Composition of Giant Star-Forming Clumps at* $z = 1 - 4$
   Kalita, Boris S. ; Claeyssens, Adélaïde ; Ho, Luis C. ; Dessauges-Zavadsky, Miroslava ; Förster Schreiber, Natascha M. ; Daddi, Emanuele ; Silverman, John D. ; Bhadari, Naval Kishor ; Chen, Changhao ; Jiang, Fangzhou ; Wang, Ke ; Liang, Jinning ; Segovia Otero, Alvaro ; Shangguan, Jinyi
   arXiv:2610.03867 (2026) — *Submitted to ApJ*

3. *Galactic Bars Are Already Mature at Cosmic Noon: Bar Strength and Flatness at* $z \sim 1.5$
   Kalita, Boris S. ; Ho, Luis C. ; Silverman, John D. ; Bournaud, Frédéric ; Dessauges-Zavadsky, Miroslava ; Daddi, Emanuele ; Puglisi, Annagrazia ; Ding, Xuheng ; Yu, Si-Yue
   ApJ, 997, 247 (2026)

4. *A multi-wavelength investigation of spiral structures in* $z > 1$ *galaxies with JWST*
   Kalita, Boris S. ; Yu, Si-Yue ; Silverman, John D. ; Daddi, Emanuele ; Ho, Luis C. ; Faisst, Andreas L. ; Dessauges-Zavadsky, Miroslava ; Puglisi, Annagrazia ; Kashino, Daichi ; Kartaltepe, Jeyhan S. ; et al. [COSMOS Team]
   ApJL, 979, L44 (2025)

5. *Clumps as multi-scale structures in Cosmic Noon galaxies*
   Kalita, Boris S. ; Suzuki, Tomoko L. ; Kashino, Daichi ; Silverman, John D. ; Daddi, Emanuele ; Ho, Luis C. ; Ding, Xuheng ; Mercier, Wilfried ; Faisst, Andreas L. ; Sheth, Kartik ; Valentino, Francesco ; Puglisi, Annagrazia ; et al. [COSMOS Team]
   MNRAS, 536, 3090 (2025)

6. *Near-IR clumps and their properties in high-*z *galaxies with JWST/NIRCam*
   Kalita, Boris S. ; Silverman, John D. ; Daddi, Emanuele ; Mercier, Wilfried ; Ho, Luis C. ; Ding, Xuheng
   MNRAS, 537, 402 (2025)

7. *A Rest-frame Near-IR Study of Clumps in Galaxies at* $1 < z < 2$ *Using JWST/NIRCam: Connection to Galaxy Bulges*
   Kalita, Boris S. ; Silverman, John D. ; Daddi, Emanuele ; Bottrell, Connor ; Ho, Luis C. ; Ding, Xuheng ; Yang, Lilan
   ApJ, 960, 25 (2024)

8. *Bulge formation inside quiescent lopsided stellar disks: Connecting accretion, star formation, and morphological transformation in a* $z \sim 3$ *galaxy group*
   Kalita, Boris S. ; Daddi, Emanuele ; Bournaud, Frederic ; Rich, Robert Michael ; Valentino, Francesco ; Gómez-Guijarro, Carlos ; Codis, Sandrine ; Delvecchio, Ivan ; Elbaz, David ; Strazzullo, Veronica ; de Souza Magalhaes, Victor ; Pety, Jérôme ; Tan, Qinghua
   A&A, 666, A44 (2022)

9. *An Ancient Massive Quiescent Galaxy Found in a Gas-rich $z \sim 3$ Group*
Kalita, Boris S. ; Daddi, Emanuele ; D'Eugenio, Chiara ; Valentino, Francesco ; Rich, R. Michael ; Gómez-Guijarro, Carlos ; Coogan, Rosemary T. ; Delvecchio, Ivan ; Elbaz, David ; Neill, James D. ; Puglisi, Annagrazia ; Strazzullo, Veronica
ApJL, 917, L17 (2021)

10. *Feedback factory: multiple faint radio jets detected in a cluster at $z = 2$*
Kalita, Boris S. ; Daddi, Emanuele ; Coogan, Rosemary T. ; Delvecchio, Ivan ; Gobat, Raphael ; Valentino, Francesco ; Strazzullo, Veronica ; Tremou, Evangelia ; Gómez-Guijarro, Carlos ; Elbaz, David ; Finoguenov, Alexis
MNRAS, 503, 1174-1186 (2021)

11. *Jellyfish: Resolving the Kinematics of Extreme Ram-pressure Stripping at $z \sim 0.3$*
Kalita, Boris S. ; Ebeling, Harald
ApJ, 887, 158 (2019)

12. *Jellyfish: Ram Pressure Stripping As a Diagnostic Tool in Studies of Cluster Collisions*
Ebeling, Harald ; **Kalita, Boris S. (co-lead author)**
ApJ, 882, 127 (2019)

Co-author publications [15]

1. *Unveiling galaxy structures: systematic analysis of bulge + disc decomposition using simulated JWST/NIRCam observations*
Tang Z., Ding X., **Kalita, Boris S.**, Yang L.
MNRAS, 541, 750 (2025)

2. *A PAH deficit in the starburst core of a distant spiral galaxy*
Liu Z., Silverman J. D., Daddi E., **Kalita Boris S.**, et al.
MNRAS, 542, 397 (2025)

3. *Color profiles of disk galaxies at $z = 1$–3 observed with JWST: Implications for outer-disk formation histories*
Yu S.-Y., Xu D., **Kalita Boris S.**, Li S., Silverman J. D., Liang X., Fang T.
A&A, 693, L9 (2025)

4. *NOEMA formIng Cluster survEy (NICE): Characterizing eight massive galaxy groups at $1.5 < z < 4$ in the COSMOS field*
Sillassen, Nikolaj B. ; et al., including **Kalita, Boris S.**
A&A, 690, A55 (2024)

5. *JWST/CEERS sheds light on dusty star-forming galaxies: Forming bulges, lopsidedness, and outside-in quenching at cosmic noon*
Le Bail, Aurélien ; et al., including **Kalita, Boris S.**
A&A, 688, A53 (2024)

6. *In-Situ Spheroid Formation in Distant Submillimeter-Bright Galaxies*
Tan, Qing-Hua ; et al., including **Kalita, Boris S.**
Nature, 636, 69 (2024)

7. *JWST and ALMA Discern the Assembly of Structural and Obscured Components in a High-redshift Starburst Galaxy*
Liu, Zhaoxuan ; et al., including **Kalita, Boris S.**
ApJ, 968, 15 (2024)

8. *Fitting pseudo-Sérsic (Spergel) light profiles to galaxies in interferometric data: The excellence of the uv-plane*
Tan, Qing-Hua ; et al., including **Kalita, Boris S.**

A&A, 684, A23 (2024)

9. *IllustrisTNG in the HSC-SSP: image data release and the major role of mini mergers as drivers of asymmetry and star formation*
   Bottrell, Connor ; et al., including **Kalita, Boris S.**
   MNRAS, 527, 6506-6539 (2024)

10. *A super-linear 'radio-AGN main sequence' links mean radio-AGN power and galaxy stellar mass since* $z \sim 3$
    Delvecchio, I. ; et al., including **Kalita, Boris S.**
    A&A, 668, A81 (2022)

11. *The bending of the star-forming main sequence traces the cold- to hot-accretion transition mass over* $0 < z < 4$
    Daddi, E. ; et al., including **Kalita, Boris S.**
    A&A, 661, L7 (2022)

12. *GOODS-ALMA 2.0: Starbursts in the main sequence reveal compact star formation regulating galaxy evolution prequenching*
    Gómez-Guijarro, C. ; et al., including **Kalita, Boris S.**
    A&A, 659, A196 (2022)

13. *Evidence for Cold-stream to Hot-accretion Transition as Traced by Ly*α *Emission from Groups and Clusters at* $2 < z < 3.3$
    Daddi, E. ; et al., including **Kalita, Boris S.**
    ApJL, 926, L21 (2022)

14. *Three Lyman-*α*-emitting filaments converging to a massive galaxy group at* $z = 2.91$*: discussing the case for cold gas infall*
    Daddi, E. ; et al., including **Kalita, Boris S.**
    A&A, 649, A78 (2021)

15. *The infrared-radio correlation of star-forming galaxies is strongly* $M_\star$*-dependent but nearly redshift-invariant since* $z \sim 4$
    Delvecchio, I. ; et al., including **Kalita, Boris S.**
    A&A, 647, A123 (2021)