Istiak H. Akib

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ACADEMIC BACKGROUND

PhD in Astrophysics Oct 2024 - Present
Observatoire de Paris, Université Paris Sciences et Lettres (PSL), France
ED-127: Ecole Doctorale Astronomie et Astrophysique d'Ile de France

Master in Space Science and Technology Sep 2022 - July 2024
Observatoire de Paris, Université Paris Sciences et Lettres (PSL), France
- Grade: 17.4/20 (Très Bien - Highest Honours)
- Total Coursework: 120 ECTS, Research Credit: 67 ECTS
- International Incoming Mobility Grant

Bachelor of Science in Physics (Advanced Major) Feb 2019 - Aug 2022
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea
- GPA: 3.67/4.3 (Percentage: 93%)
- Total Coursework: 137 KAIST Credit (4 academic year), Research Credit: 8
- Honors Student, Excellence in Leadership and Volunteer Activity, KAIST International Scholarship

SKILLS

Programming: Python (Astropy, Pandas, GalPy, Plotly, PyTorch), R, C, ADQL
Relevant Softwares: TOPCAT, AstroImageJ, MATLAB, Origin
Operating Systems: Linux, Windows
Language: English (C2), French (Basic), Korean (Basic), Bangla (Native)

RESEARCH EXPERIENCE

PhD Project Oct 2024 - Present
LIRA (Laboratoire d'Instrumentation et de Recherche en Astrophysique), Observatoire de Paris, France
Title: Reevaluation of the Dynamical Masses of Local Group Galaxies
Supervisor: Dr. François Hammer, Dr. Yanbin Yang
- Modeling the MW - Gaia Enceladus/Sausage (GSE) merger to reproduce observational properties of the MW
- Adjusting the M31 merger modelling to fit the observed rotation curve
- Modeling dwarf infall to evaluate IGM and CGM densities of the Local Group

Galaxy Rotation Curve May 2024 - Present
GEPI (Galaxies, Stars, Physics and Instrumentation), Observatoire de Paris, France
- Analysis of the MW rotation curve, MW-like galaxies in the cosmological simulations, and the M31 rotation curve from observations and merger modeling

Local Group Timing Argument Jan 2024 - Feb 2025
GEPI (Galaxies, Stars, Physics and Instrumentation), Observatoire de Paris, France

- Re-calculating the local group mass using the timing argument by taking into account the major merger at the M31
- Determining the impact of merger histories on the timing argument mass

Origin of the Dwarf Galaxies in the MW Sept 2022 - Dec 2024
GEPI (Galaxies, Stars, Physics and Instrumentation), Observatoire de Paris, France

- Calculated orbits of MW Dwarf Galaxies and Globular Clusters under different MW mass models using GAIA EDR3 data
- Investigation of high energy VPOS dwarfs to be originated from a recent M31 major merger tail models under different MW potential and M31 proper motions
- Found 6D association between tidal tail models and LMC related dwarfs. First indication of matter exchange between M31 and MW and explanation for VPOS.

Bachelor Thesis and Research Internship June 2021 - April 2023
Toruń Astrophysics/Physics Summer Program, Nicolaus Copernicus University, Poland
Title: Polarimetric Study of Stars with Planets and Circumstellar Disks from the Kepler Field
Supervisor: Prof. Agnieszka Słowikowska

- Performed data reduction and analysis using AstroImageJ and Astropy for the polarimetric observations of ∼50 stars in the Kepler field with planets and/or circumstellar disks from RTT150 telescope with WeDoWo Polarimeter
- Investigated correlation between polarisation degree of target stars and interstellar medium (ISM), planetary & stellar parameters and polarimetric variation over time. Was presented at the EAS 2022 and followed up using the Shane Telescope.

PUBLICATIONS

1. I. Akib, F. Hammer, Y. B. Yang, Impact of merger histories on the timing argument estimate of the Local Group mass, *Astronomy & Astrophysics*, 2025
2. I. Akib, F. Hammer, Y. B. Yang, M. S. Pawlowski, J. L. Wang, An intriguing coincidence between the majority of vast polar structure dwarfs and a recent major merger at the M31 position, *Astronomy & Astrophysics*, 2025
3. F. Hammer, Y. B. Yang, P. Amram, L. Chemin, G. A. Mamon, J. L. Wang, I. Akib, Y. J. Jiao, H. F. Wang, Dark matter fraction derived from the M31 rotation curve, *Astronomy & Astrophysics*, 2025
4. F. Hammer, Y. J. Jiao, G. A. Mamon, Y. B. Yang, I. Akib, P. Amram, H. F. Wang, J. L. Wang, L. Chemin, The Milky Way accretion history compared to cosmological simulations, *Astronomy & Astrophysics*, 2024

EDUCATION AND OUTREACH

- Supervising research project of M1 students 2024, 2025
- Student Ambassador and Student Buddy at Université PSL 2023-Present
- Tutor for General Physics and Physics major Lab course at KAIST 2021-2022
- Mentor for freshman students at KAIST and the Physics department 2020-2022
- Academic mentor for IPhO Bangladesh team 2017-2022
- Writer for physics and astronomy at a science magazine 2017- Present

REFERENCES

Dr. François Hammer
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GEPI, Observatoire de Paris,
Université PSL, France
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Dr. Marcel S. Pawlowski
Leibniz Junior Research Group Leader,
Leibniz-Institute for Astrophysics (AIP),
Germany
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