

Address

01-5781 Binning Ave,
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Phone

+1 (514) 519 7759

Email

anan.lu@ubc.ca

Skills

Software

Solid Works, ANSYS,
MatLab, Maple
, Arduino, LabVIEW,
CMM, MasterCAM,
LaTex, MS Office

Programming

Python, C,
FORTRAN, C++

Specialty

Astrophysics, galaxy,
star formation, IFU
spectroscopy, GMCs,
AGN, MEMS, CAD,
Aerodynamics

Languages

English ★★★★★
Mandarin ★★★★★
French ★★★★★
Latin ★★★★★

AnanLU

PhD candidate at McGill Space Institute

Education

- 2021 - 2024 **PhD, Astrophysics** [McGill University](#)
• Relevant courses: Galaxy and Cosmology, Radiative Processes
• *Tentative Thesis: Star Formation Efficiency in the bulge of nearby galaxies, with data from SITELLE and ALMA. Supervisor: Prof. Daryl Haggard*
- 2020 - 2021 **Master of Science, Physics** [McGill University](#)
• Relevant courses: Astrophysics, Astrophysical Fluids, Machine Learning, High Energy Astrophysics. *Supervisor: Prof. Daryl Haggard. GPA 3.94 (out of 4.0)*
- 2018 - 2020 **Master of Engineering, Mechanical Engineering-Thesis** [McGill University](#)
• Relevant courses: Subsonic Aerodynamics, Experimental Fluid Dynamics, winged in-ground-effect vehicles
• *Title of the Thesis: "An investigation of ground effect on wingtip vortex generated by a rectangular NACA 0012 wing". Supervisor: Prof. Tim Lee*
- 2011 - 2015 **Bachelor's Degree, Honour's Mechanical Engineering** [McGill University](#)
Dean's Honour List 2011-2012, GPA 3.51 (out of 4.0)
• Relevant courses: MEMS and Microfluids, Control Systems, 3D Printing, Advanced Fluid Dynamics, Spacecraft Dynamics, Multi-Disciplinary Optimization
• *Title of the Thesis: "3D Printing Physical Sensors with Flexible and Conductive Thermalplastic Materials".*

Experience

- 11/24 - now **Postdoctoral Researcher** [University of British Columbia, Canada](#)
• Target selection for next generation infrared IFUs
• Multi-wavelength study of nuclear rings
• Galaxy evolution and star formation
Supervisor: Prof. Allison Man
- 07/20 - 10/24 **Graduate Researcher** [Trottier Space Institute, McGill University, Canada](#)
• Analyse observational data from SITELLE at CFHT, ALMA and VLA
• Understand star formation efficiency in extragalactic bulges and nuclear rings
Significant Projects:
- Star formation efficiency in the bulges of 8 galaxies using SITELLE and ALMA: NGC 3169 (published), NGC 524 (published), and the catalogue under review.
- Leading proposals for a multi-wavelengths study of nuclear rings: combining VLA, ALMA, MUSE and JWST.
Supervisor: Prof. Daryl Haggard
- 09/18 - 06/20 **MEng Graduate Researcher** [Aerodynamics Lab, McGill University, Canada](#)
• Involve in several experimental aerodynamic projects. Data acquisition and analysis. Design and maintenance of experimental set-up
Significant Projects:
- Wind tunnel experiments on wingtip vortex in ground effect
Supervisor: Prof. Tim Lee
- 04/16 - 07/18 **Junior Mechanical Engineer** [LumenWerx](#)
• Design custom sheet metal parts, and create drawings. Create CAD assemblies and bill of materials of standard or custom products.
• Involved in supply chain management using Epicor.
• Supervised a small team who create standard CAD assemblies, and provide training to new employees.
- 09/13 - 12/15 **Research Assistant** [Biomechanical Microsystems Lab, McGill University, Canada](#)
Significant Projects:
- Paper-based micro accelerometer and UV sensors
- 3D printing electronics and sensors with innovative materials
Supervisor: Prof. Xinyu Liu

Scientific Contributions

Lu, A. et. al (2025). **WISDOM project--XXIII. Star-formation efficiency of eight early-type galaxies and bulges observed with SITELLE and ALMA.** *MNRAS*, vol. 540, no. 1, pp 71–89, doi.org/10.1093/mnras/staf675

Lu, A. et. al (2024). **WISDOM project--XX. Strong shear tearing molecular clouds apart in NGC 524.** *MNRAS*, vol. 531, no. 4, pp. 3888-3904. doi:10.1093/mnras/stae1395

Lu, A. et. al (2022). **WISDOM project--XI. Star Formation Efficiency in the Bulge of the AGN-host Galaxy NGC 3169 with SITELLE and ALMA.** *MNRAS*, vol. 514, no. 4, pp. 5035–5055, 2022. doi:10.1093/mnras/stac1583.

Lu, A. ; Lee, T. (2021). **Effect of Ground Boundary Condition on Near-Field Wingtip Vortex Flow and Lift-Induced Drag** *Journal of Fluids Engineering*, 143(3)

Lu, A. ; Lee, T. (2020). **Passive Wingtip Vortex Control by Using Tip-Mounted Half Delta Wings in Ground Effect** *Journal of Fluids Engineering*, 142(2)

Lu, A. , Tremblay-Dionne,V., Lee,T. (2019). **Experimental Study of Aerodynamics and Wingtip Vortex of a Rectangular Wing in Flat Ground Effect** *Journal of Fluids Engineering*, 141(11)

Choi, W., Bureau, M., Liu, L., Cappellari, M., Davis, T.A., Gensior, J., Liang, F.H., Lu, A. , Moon, S., Ruffa, I., Williams, T.G., Chung, A., (2024) **WISDOM Project--XXI. Giant molecular clouds in the central region of the barred spiral galaxy NGC 613: a steep size–linewidth relation.** *MNRAS*, 531(4), pp.4045-4059.

Elford, J.S., Davis, T.A., Ruffa, I., Bureau, M., Cappellari, M., Gensior, J., Iguchi, S., Liang, F.H., Liu, L., Lu, A. and Williams, T.G., (2024) **WISDOM Project-XVI. The link between circum-nuclear molecular gas reservoirs and active galactic nucleus fuelling.** *MNRAS*, 528(1), pp.319-336.

Liang, F.H., Smith, M.D., Bureau, M., Gao, F., Davis, T.A., Cappellari, M., Elford, J.S., Greene, J.E., Iguchi, S., Lelli, F. and Lu, A. , (2024) **WISDOM project--XVIII. Molecular gas distributions and kinematics of three megamaser galaxies.** *MNRAS*, 527(3), pp.9343-9358.

Daly, R.A., Donahue, M., O'Dea, C.P., Sebastian, B., Haggard, D. and Lu, A. , (2024) **New black hole spin values for Sagittarius A* obtained with the outflow method.** *MNRAS*, 527(1), pp.428-436.

Williams, T.G., Bureau, M., Davis, T.A., Cappellari, M., Choi, W., Elford, J.S., Iguchi, S., Gensior, J., Liang, F.H., Lu, A. and Ruffa, I., (2023) **WISDOM Project--XVII. Beam-by-beam properties of the molecular gas in early-type galaxies.** *MNRAS*, 525(3), pp.4270-4298.

Ruffa, I., Davis, T.A., Cappellari, M., Bureau, M., Elford, J., Iguchi, S., Lelli, F., Liang, F.H., Liu, L., Lu, A. and Sarzi, M., (2023) **WISDOM project--XIV. SMBH mass in the early-type galaxies NGC 0612, NGC 1574, and NGC 4261 from CO dynamical modelling.** *MNRAS*, 522(4), pp.6170-6195.

Choi, W., Liu, L., Bureau, M., Cappellari, M., Davis, T.A., Gensior, J., Liang, F.H., Lu, A. , Williams, T.G. and Chung, A., (2023) **WISDOM Project--XV. Giant molecular clouds in the central region of the barred spiral galaxy NGC 5806.** *MNRAS*, 522(3), pp.4078-4097.

Li, X., Wang, Y. H., Lu, A. , Liu, X. (2015) **Controllable hydrothermal growth of ZnO nanowires on cellulose paper for flexible sensors and electronics** *IEEE Sensors Journal*, 15(11), 6100-6107.

Oral Presentation: Lu, A. “ Star formation efficiency in elliptical galaxies at cloud scale: case studies of NGC 0524 and NGC 0383”, Canadian Astronomical Society (CASCA) 2021 AGM (National Conference), Penticton, Canada, June 12-16, 2023

Oral Presentation: Lu, A. “ What is regulating star formation in galaxy bulges? Finding answers in molecular gas clouds with ALMA”, ALMA 10 years mini-symposium, Online, Millimetre Astronomy Group at NRC Herzberg, March 9, 2023

Oral Presentation: Lu, A. “ Star Formation Efficiency in the Bulge of the AGN-host Galaxy NGC 3169 with SITELLE and ALMA”, American Astronomical Society (AAS) Meeting 240, Pasadena,

Unites States, June 12-16, 2022

Oral Presentation: Lu, A. "Star Formation Efficiency in the Bulge of the AGN-host Galaxy NGC 3169 with SHELLE and ALMA", CRAQ Meeting 2022, Bishops, Canada, May 11-13, 2022

Oral Presentation: Lu, A. "Investigating Star Formation Suppression in Galaxy Bulges with SHELLE and ALMA", Canadian Astronomical Society (CASA) 2021 AGM (National Conference), online, Canada, May 10-14, 2021