Curriculum Vitae: Jiaru Li

Cornell University
Department of Astronomy
614 Space Sciences Building
Ithaca, NY 14850

Cell: 607-592-8068
Email: jiaru_li@astro.cornell.edu
Website: lijiaru0305.github.io
ORCID: 0000-0001-5550-7421

Education

Jun 2023 (est.)	Ph.D., Cornell University (Astronomy)
Dec 2019	M.S., Cornell University (Astronomy)
May 2017	H.B.Sc., University of Toronto at Scarborough (Physics Specialist, Mathematics Major)

Research Experience

- **Secular Interaction between Planets and Protoplanetary disks**
  Advisor: Prof. Dong Lai (Cornell University) *2022 - present*
- **Dynamical Formation and Evolution of Black Hole Binaries in Active Galactic Nucleus Disks**
  Advisor: Dr. Hui Li (Los Alamos National Laboratory) *2020 - present*
  Collaborators: Dr. Adam M. Dempsey, Dr. Shengtai Li and Dr. Ya-Ping Li
- **Eccentric Protoplanetary Disks: Linear Mode, Hydrodynamics Simulations, and Ring Formation**
  Advisor: Dr. Hui Li (Los Alamos National Laboratory) *2020 - present*
  Collaborators: Dr. Adam M. Dempsey and Dr. Shengtai Li
- **Dynamical Instability in Multi-Orbiter Systems: Mergers, Scatterings, and Binary Formations**
  Advisor: Prof. Dong Lai (Cornell University) *2017 - present*
  Collaborators: Dr. Laetitia Rodet, Dr. Kassandra Anderson and Dr. Bonan Pu
- **Quantum Geometric Phase Effects in Large Molecules**
  Advisor: Prof. Artur Izmaylov (University of Toronto) *2015-2017*
  Collaborator: Dr. Loïc Jouber-Doriol

Selected Honors and Awards

- **Center for Space and Earth Science Student Fellowship**, Los Alamos National Laboratory 2020 - 2022

- **Cornell New Graduate Student Fellowship** 2017
- **Governor General's Silver Medal nomination**, University of Toronto 2017
- **Graduating Prize in the Physical and Environmental Sciences**, University of Toronto at Scarborough 2017
- **Samuel Beatty In-Course Scholarship**, University of Toronto 2017
- **University of Toronto Excellence Award** 2016
- **E-Fund Scholarship**, University of Toronto at Scarborough 2013 - 2016
- **Vincent Bladen Scholarship**, University of Toronto at Scarborough 2015
- **A. D. Allen Memorial Scholarship**, University of Toronto at Scarborough 2014

Selected Teaching Experience

- **Our Solar System**, Teaching Assistant, Cornell 2019
- **From New Worlds to Black Holes**, Teaching Assistant, Cornell 2018
- **Calculus I & II for Math Major**, Teaching Assistant, Toronto 2016 - 2017
- **Linear Algebra II,** Teaching Assistant, Toronto 2016

Selected Presentations

- **CCA at Flatiron Planetary Group Meeting** New York City, NY Dec 2022
  Seminar talk: *"Disk Eccentricities, Rings, Planets"*
- **Princeton Univeristy PLunch** Princeton, NJ Nov 2022
  Seminar talk: *"Resonant Excitation of Planetary Eccentricity due to a Dispersing Eccentric Protoplanetary Disk"*
- **Penn State CEHW Seminar** State College, PA Nov 2022
  Seminar talk: *"Produce Highly-Eccentric Planets by the Dispersal of Eccentric Disks"*
- **Recent Advances in Supermassive Black Holes** Ithaca, NY Oct 2022
  Workshop Talk: "*Eccentric Black Holes Binaries in AGN Disks*"
- **Georgia Tech CRA Seminar** Atlanta, GA Oct 2022
  Seminar talk: "*Formation of Black Hole Binaries in AGN disks through Close Encounters*"
- **Los Alamos Astrophysics Seminar** Los Alamos, NM Aug 2022
  Seminar talk: "*Formation of Black Hole Binaries in AGN disks through Close Encounters"*
- **AAS Division on Dynamical Astronomy Meeting** New York, NY Apr 2022
  Conference Talk: "*Long-term Evolution of Tightly-Packed Stellar Black Holes in AGN Disks: Formation of Merging Black-Hole Binaries via Close Encounters"*
- **Distorted Astrophysical Discs Workshop at KICC** Cambridge, UK May 2021
  Conference Poster: "*Ring Formation in Protoplanetary Discs Driven by an Eccentric Instability"*
- **Cornell Astrophysics Seminar** Ithaca, NY Multiple Times
  Seminar talks: various different topics

List of All Publications: Jiaru Li

Cornell University
Department of Astronomy
614 Space Sciences Building
Ithaca, NY 14850

Cell: 607-592-8068
Email: jiaru_li@astro.cornell.edu
Website: lijiaru0305.github.io
ORCID: 0000-0001-5550-7421

First Author Publications

1. **Li, J.** and Lai, D. (2022)
   Resonant Excitation of Planetary Eccentricity due to a Dispersing Eccentric Protoplanetary Disk: A New Mechanism of Generating Large Planetary Eccentricities
   submitted

2. **Li, J.**, Dempsey, A. M., Li, H., Lai, D., and Li, S. (2022)
   Hydrodynamical Simulations of Black-Hole Binary Formation in AGN Disks
   submitted

3. **Li, J.**, Rodet, L., and Lai, D. (2022)
   Dynamical Instability in Multi-Orbiter Systems with Gas Friction
   submitted

4. **Li, J.**, Lai, D., and Rodet, L. (2022)
   Long-term Evolution of Tightly Packed Stellar Black Holes in AGN Disks: Formation of Merging Black Hole Binaries via Close Encounters
   The Astrophysical Journal, Volume 934, Issue 2, id. 154 (12 pp.)

5. **Li, J.**, Dempsey, A. M., Li, H., and Li, S. (2021)
   Ring Formation in Protoplanetary Disks Driven by an Eccentric Instability
   The Astrophysical Journal, Volume 910, Issue 1, id. 79 (14 pp.)

6. **Li, J.**, Lai, D., Anderson, K., and Pu, B. (2021)
   Giant Planet Scatterings and Collisions: Hydrodynamics, Merger-ejection Branching Ratio, and Properties of the Remnants
   Monthly Notices of the Royal Astronomical Society, Volume 501, Issue 2, pp. 1621-1632

7. **Li, J.** and Lai, D. (2020)
   Planetary Spin and Obliquity from Mergers
   The Astrophysical Journal Letters, Volume 898, Issue 1, id. L20 (7 pp.)

8. **Li, J.**, Joubert-Doriol, L., and Izmaylov, A. F. (2017)
   Geometric Phase Effects in Excited State Dynamics through a Conical Intersection in Large Molecules: N-dimensional Linear Vibronic Coupling Model Study
   The Journal of Chemical Physics, Volume 147, Issue 6, id. 064106

Co-Authored Publications

9. Li, Y.-P., Dempsey, A. M., Li, H., Li, S., and **Li, J.** (2022)
   Hot Circumsingle Disks Drive Binary Black Hole Mergers in Active Galactic Nucleus Disks
   The Astrophysical Journal Letters, Volume 928, Issue 2, id. L19 (8 pp.)

10. Li, Y.-P., Dempsey, A. M., Li, S., Li, H., and **Li, J.** (2021)
    Orbital Evolution of Binary Black Holes in Active Galactic Nucleus Disks: A Disk Channel for Binary Black Hole Mergers?
    The Astrophysical Journal, Volume 911, Issue 2, id. 124 (10 pp.)

11. Izmaylov, A. F., **Li, J.**, and Joubert-Doriol, L. (2016)
    A Diabatic Definition of Geometric Phase Effects
    Journal of Chemical Theory and Computation, Volume 12, pp. 5278-5283