

Hui Li

NASA Hubble Fellowship

MIT Kavli Institute for Astrophysics and Space Research 

 +1 734-277-1186 •  hliastro@mit.edu •  lihui870222.github.io

Positions

- | | |
|---|---|
| <ul style="list-style-type: none">◦ Columbia University
<i>Hubble Fellow, Host: Prof. Greg Bryan</i> | New York
<i>Sep. 2020–</i> |
| <ul style="list-style-type: none">◦ MIT MKI
<i>Hubble Fellow, Host: Prof. Mark Vogelsberger</i> | Boston
<i>Dec. 2019–Aug. 2020</i> |
| <ul style="list-style-type: none">◦ MIT MKI
<i>Postdoctoral Associate, Host: Prof. Mark Vogelsberger</i> | Boston
<i>Oct. 2017–Nov. 2019</i> |

Research Interests

- Star Cluster Formation and Evolution in Cosmological Simulations
- Formation of Star Cluster and Disruption of Giant Molecular Cloud
- Formation and Evolution of Globular Cluster in Different Types Galaxies
- Thermal Conduction and Turbulence in Magnetized IntraCluster Medium
- Cosmic Ray Acceleration and Propagation in the Galaxy
- The Gamma-Ray Emission of Supernova Remnants and Pulsar Wind Nebulae

Education

- | | |
|---|--------------------------------------|
| <ul style="list-style-type: none">◦ University of Michigan
<i>Ph.D. in Astronomy and Astrophysics, Advisor: Prof. Oleg Y. Gnedin</i> | Ann Arbor
<i>2012-2017</i> |
| <ul style="list-style-type: none">◦ University of Michigan
<i>M.A. in Statistics, Mentor: Prof. Ji Zhu</i> | Ann Arbor
<i>2013-2016</i> |
| <ul style="list-style-type: none">◦ Nanjing University
<i>B.S. and M.S. in Astronomy and Astrophysics, Advisor: Prof. Yang Chen</i> | Nanjing
<i>2005-2012</i> |

Publications

10 first-author, 24 in total, >460 citations, *h*-index=13 in ADS database

First-Author.....

- **Li, Hui**; Vogelsberger, Mark; Marinacci, Federico; Sales, Laura; Torrey, Paul, "The effects of subgrid models on the properties of giant molecular clouds in galaxy formation simulations",

MNRAS submitted

- **Li, Hui**; Vogelsberger, Mark; Marinacci, Federico; Gnedin, Oleg, "Disruption of giant molecular clouds and formation of bound star clusters under the influence of momentum stellar feedback", 2019, MNRAS, 487, 364
- **Li, Hui**; Gnedin, Oleg, "Star Cluster Formation in Cosmological Simulations. III. Dynamical and Chemical Evolution", 2019, MNRAS, 486, 4030
- **Li, Hui**; Gnedin, Oleg; Gnedin, Nickolay, "Star Cluster Formation in Cosmological Simulations. II. Effects of Star Formation Efficiency and Stellar Feedback", 2018, ApJ, 861, 107
- **Li, Hui**; Gnedin, Oleg; Gnedin, Nickolay; Meng, Xi; Semenov, Vadim; Kravtsov, Andrey, "Star cluster formation in cosmological simulations. I. Properties of young clusters", 2017, ApJ, 834, 69
- **Li, Hui**; Gnedin, Oleg, "Modeling The Formation of Globular Cluster Systems in The Virgo Cluster", 2014, ApJ, 796, 10
- **Li, Hui**; Chen, Yang, " γ -rays from Molecular Clouds Illuminated by Accumulated Diffusive Protons. II: Interacting Supernova Remnants", 2012, MNRAS, 421, 935
- **Li, Hui**; Liu, Siming; Chen, Yang, "Derivation of the Electron Distribution in SNR RX J1713.7-3946 via a Spectral Inversion Method", 2011, ApJ Letters, 742, 10
- **Li, Hui**; Chen, Yang, " γ -rays from Molecular Clouds Illuminated by Accumulated Diffusive Protons from Supernova Remnant W28", 2010, MNRAS Letters, 409, 1, 35
- **Li, Hui**; Chen, Yang; Zhang, Li, "Lepto-Hadronic Origin of γ -rays from the G54.1+0.3 Pulsar Wind Nebula", 2010, MNRAS Letters, 408, 1, 80

Co-Author.....

- McKinnon, Ryan; ..., **Li, Hui**, et al., Simulating dust grain-radiation coupling on a moving mesh, MNRAS submitted
- Zhang, Shuo; Zhu, Zhenlin; **Li, Hui**, et al., NuSTAR and Chandra observation of the Galactic center X-ray filament G0.13-0.11: A pulsar wind nebula driven magnetic filament, ApJ submitted
- Wang, Yunchong; ..., **Li, Hui**, et al., Early-Type Galaxy Density Profiles from IllustrisTNG: II. Evolutionary trend of the total density profile, 2019, MNRAS, 490, 5722
- Wang, Yunchong; ..., **Li, Hui**, et al. "Early-type galaxy density profiles from IllustrisTNG: I. Correlations with galaxy parameters", MNRAS in press
- Meng, Xi; Gnedin, Oleg; **Li, Hui**, "Structure of high-redshift galaxies in cosmological simulations", 2019, MNRAS, 486, 1574
- Choksi, Nick; Marta Volonteri; Monica Colpi; Gnedin, Oleg; **Li, Hui**, "The star clusters that make black hole binaries across cosmic time", 2019, ApJ, 873, 100
- Liu, Ruoyu; et al., "Gamma-Ray Production in the Extended Halo of the Galaxy and Possible Implications for the Origin of Galactic Cosmic Ray", 2019, ApJ, 871, 40
- Brown, Gillen; Gnedin, Oleg; **Li, Hui**, "Nuclear Star Clusters in Cosmological Simulations", 2018, ApJ, 864, 94
- Choksi, Nick; Gnedin, Oleg; **Li, Hui**, "Formation of Globular Cluster Systems: From Dwarf

- Galaxies to Giants", 2018, MNRAS, 480, 2343
- Zhang, Shuo; et al., "NuSTAR Detection of a Hard X-ray Source in the Supernova Remnant-Molecular Cloud Interaction Site of IC 443", 2018, ApJ, 859, 141
- Kim, Ji-hoon; et al., "The AGORA High-Resolution Galaxy Simulations Comparison Project. II: Isolated Disk Test", 2016, ApJ, 833, 202
- Zhang, Xiao; **Li, Hui**; Chen, Yang, "The γ -ray emission produced by protons that escape from supernova remnant G349.7+0.2", 2016, RAA, 16, 10
- Zhang, Xiao; Chen, Yang; **Li, Hui**; Zhou, Xin, "On the hadronic γ -ray emission from Tycho's supernova remnant", 2013, MNRAS, 429, 25
- Torres, Diego F.; **Li, Hui**; Chen, Yang; Cillis, Analía; Caliandro, Andrea G.; Rodríguez-Marrero, Ana Y., "Cosmic Rays in the Surroundings of SNR G35.6-0.4", 2011, MNRAS, 417, 3072

Proposals for High-Performance Computing

- "Disruption of giant molecular clouds via ionizing stellar feedback", 2018, PI, NASA Pleiades HEC-SMD-18-2050, 186,258 SBU's ~ 1.6 M CPU hr, equivalent to $\sim \$44,700$.
- "Exploration of directly coupled radiative quasar feedback", 2018, Co-PI, XSEDE comet TG-AST180025, 2M CPU hr, equivalent to $\sim \$70,000$.
- "Quantifying the effects of anisotropy thermal conduction on the turbulence properties in magnetized intracluster medium", 2017, XSEDE comet TG-AST170042, 50,000 CPU hr, equivalent to $\sim \$1,750$.
- "Calibrating sub-grid models of the cosmological simulations on parsec scales", 2017, XSEDE comet TG-AST170007, 50,000 CPU hr, equivalent to $\sim \$1,750$.

Technical Skills

- C, C++, Fortran, Python, IDL
- MPI, OpenMP, Hadoop, SQL
- R, SAS, Mathematica, \LaTeX
- ART, GADGET, AREPO, yt

Professional Services

Referee of ApJ, MNRAS, Research in Astronomy and Astrophysics, New Astronomy
 Reviewer of Future Investigators in NASA Earth and Space Science and Technology (FINESST) fellowship 2019
 Member of The Extreme Science and Engineering Discovery Environment (XSEDE) Resource Allocation Committee
 Lead Guest Editor for special issues in "Advance in Astronomy"

Conferences & Seminars

- **Invited Talk** at MIAPP workshop "Connections Between Local and High-redshift Dense Star-Forming Environments", Munich, Germany, Oct. 2020
- **Invited Talk** at Globular Clusters at the Nexus of Star and Galaxy Formation, KITP, CA, May 2020
- **Invited Talk** at Computational Galaxy Formation 2020 at Ringberg Castle, Germany, Apr. 2020
- Galaxy group seminar at Center for Computational Astrophysics (CCA), NYC, Oct. 2019
- **Invited Seminar** in SFIR at Princeton University, Oct. 2019
- **Invited Seminar** at the University of Chicago, Sep. 2019
- Feedback and its Role in Galaxy Formation, Spetses, Greece, Jun. 2019
- **Invited Seminar** at Lund University, Sweden, Jun. 2019
- Four-week workshop "Zoom-in and Out: From the Interstellar Medium to the Large Scale Structure of the Universe" at NORDITA, Stockholm, Sweden, Jun. 2019
- **Invited Colloquium** at the University of Bologna, Italy, Jun. 2019
- **Invited Talk** at the IAU Symposium 351 "Star clusters: from the Milky Way to the early Universe", Bologna, Italy, May, 2019
- Galaxy group seminar at Center for Computational Astrophysics (CCA), NYC, Feb. 2019
- **Invited Talk** at the Lorentz Center Workshop "Formation of Stars and Massive clusters in Dwarf Galaxies over Cosmic Time", Leiden, Netherlands, Feb. 2019
- **Invited Talk** at the Kavli Institute for Astronomy and Astrophysics, Beijing, China, Dec. 2018
- **Invited Colloquium** at the Tsinghua University, Beijing, China, Dec. 2018
- **Invited Colloquium** at the Nanjing University, Nanjing, China, Dec. 2018
- **Invited talk** at the Mini-Workshop in Astrophysics, T.D. Lee Institute, Shanghai, China, Dec. 2018
- Santa Cruz Galaxy Workshop, CA, Aug. 2018
- The formation of globular clusters at high and low redshift, Sexten, Italy, Jul. 2018
- **Invited Colloquium** at the University of Massachusetts, Amherst, Mar. 2018
- "Harvard-Heidelberg Star Formation 2017", Cambridge, MA, Nov. 2017
- **Invited Talk** at the Galaxy Seminar at the Center for Computational Astrophysics (CCA), New York, Sep. 2017
- "Forging connection: From Nuclei to the Cosmic Web", Lansing, Michigan State University, June 2017
- "Star Cluster Formation: Mapping the First Few Myr's", Madrid, Spain, June 2017
- **Invited Talk** at Sexten Workshop "Globular Cluster Systems and their host Galaxies", Sexten, Italy, June 2017
- 5th AGORA workshop, Santa Cruz, Aug. 2016
- Great Lake Cosmology Workshop, Hamilton, Canada, Jun. 2016
- Dynamics Group Meeting, University of Toronto, Jun. 2016

- **Invited Talk** at Cluster Group Meeting, University of Chicago, May 2016
- GMT Community Science Meeting, Pacific Grove, Oct. 2015
- Santa Cruz Galaxy Workshop, CA, Aug. 2015
- **Invited Colloquium** at Nanjing University, China, Oct. 2014
- KICP Computational Cosmology Workshop, Chicago, Aug. 2013
- **Invited Talk** at 7th joint meeting of Chinese physicists worldwide (OCPA7), Kaohsiung, Taiwan, Aug. 2011
- Multi-Messenger Astronomy of Cosmic Rays, KIAA-PKU, Beijing, China, Apr. 2011
- Annual Conference of Chinese Astronomical Society, Nanning, China, Nov. 2010

Honors & Awards

NASA Hubble Fellowship, 2019-2022
 T.D. Lee Visiting Fellow in Astrophysics, Tsung-Dao Lee Institute, 2018
 Rackham One Term Dissertation Fellowship 2016
 Rackham Conference Travel Grants, 2015, 2016, 2017
 John G. Kirk Fellowship, 2014
 Ralph P. Baldwin Fellowship in Astronomy, 2012
 Excellent Master Thesis in Jiangsu Province, 2012
 The First Award of Guanghua Scholarship in Nanjing University, 2010-2011
 Excellent Graduate Student of Nanjing University, 2009-2010

Teaching, Outreach, & Student Supervision

Guest lecturer, Teaching Assistant, ASTRO 102, "Stars, Galaxies, and the Universe"	Winter 2013
Teaching Assistant, ASTRO 104 & 106, "Alien Skies"	Fall 2013
Graduate Employees' Organization (GEO) Representative	2012-2013
Xiao Zhang, now research scientist (NJU)	2011-2013
Gillen Brown, graduate student (UofM)	2015-
Xi Meng, graduate student (UofM)	2016-
Nick Choksi, graduate student (Berkeley)	2016-
Yunchong Wang, graduate student (Stanford)	2018-
Yingtian Chen, undergrad (PKU)	2019-
Yuan Wang, undergrad (NKU)	2019-

References

- **Dr. Mark Vogelsberger**
Associate Professor
Massachusetts Institute of Technology
mvogelsb@mit.edu
- **Dr. Lars Hernquist**
Mallinckrodt Professor
Harvard University
lhernquist@cfa.harvard.edu
- **Dr. Oleg Y. Gnedin**
Associate Professor
University of Michigan
ognedin@umich.edu
- **Dr. Nickolay Y. Gnedin**
Professor/Senior Scientist
University of Chicago/Fermilab
gnedin@fnal.gov
- **Dr. Q. Daniel Wang**
Professor
University of Massachusetts
wqd@umass.edu
- **Dr. Yang Chen**
Professor
Nanjing University
ygchen@nju.edu.cn