

Hsiang-Chih Hwang

Curriculum Vitae / Jan, 2021

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Education

Johns Hopkins University, PhD candidate in Physics & Astronomy 2016 - Present
Thesis advisor: Nadia L. Zakamska
National Taiwan University, BS in Physics and BE in Electrical Engineering 2010 - 2015

Awards

Government Scholarship to Study Abroad, Taiwan 2019
Gardner Fellowship, Johns Hopkins University 2018
Presidential Award, National Taiwan University 2011, 2015

Publications

(Advisee authors are indicated by an asterisk. Total 18 papers. First-author: 6. Second-author: 6)

[18] Petrosky, Evan*; **Hwang, Hsiang-Chih**; Zakamska, Nadia L.; Chandra, Vedant; Hill, Matthew J.:
[Variables, periodic variables and contact binaries in WISE](#)
Submitted to MNRAS
<https://arxiv.org/abs/2012.04690>

[17] **Hwang, Hsiang-Chih**; Ting, Yuan-Sen; Schlaufman, Kevin C.; Zakamska, Nadia; Wyse, Rosemary:
[The non-monotonic, strong metallicity dependence of the wide-binary fraction](#)
2020, accepted by MNRAS
<https://arxiv.org/abs/2010.02920>

[16] Luo, Yuanze; Heckman, Timothy; **Hwang, Hsiang-Chih**; Sánchez-Menguiano, L.; Riffel, R. et al.:
[Evidence for the Accretion of Gas in Star-Forming Galaxies: High N/O Abundances in Regions of Anomalously-Low Metallicity](#)
2020, accepted by ApJ
<https://arxiv.org/abs/2012.04073>

[15] Shen, Yue; Chen, Yu-Ching; **Hwang, Hsiang-Chih**; Liu, Xin; Zakamska, Nadia; Oguri, Masamune; Li, Jennifer I-Hsiu:
[A hidden population of high-redshift close quasar pairs unveiled by astrometry](#)
2020, in review in Nature Astronomy

[14] Chandra, Vedant*; **Hwang, Hsiang-Chih**; Zakamska, Nadia L.; Cheng, Sihao:
[A Gravitational Redshift Measurement of the White Dwarf Mass-Radius Relation](#)
2020, ApJ, 899, 146
<https://ui.adsabs.harvard.edu/abs/2020ApJ...899..146C/abstract>
Media mentions: [JHU Hub](#), [Science News](#), [Space Daily](#), [Today Headline](#), [Nerdist](#)

[13] Chandra, Vedant*; **Hwang, Hsiang-Chih**; Zakamska, Nadia L.; Budavári, Tamás:
[Computational Tools for the Spectroscopic Analysis of White Dwarfs](#)
2020, MNRAS, 497, 2688-2698
<https://ui.adsabs.harvard.edu/abs/2020MNRAS.497.2688C/abstract>

- [12] **Hwang, H.-C.**; Hamer, Jacob H.; Zakamska, Nadia L.; Schlaufman, Kevin C.:
[Very wide companion fraction from Gaia DR2: a weak or no enhancement for hot jupiter hosts, and a strong enhancement for contact binaries](#)
2020, MNRAS, 497, 2250-2259
<https://ui.adsabs.harvard.edu/abs/2020MNRAS.497.2250H/abstract>
- [11] **Hwang, H.-C.**; Zakamska, N. L.:
[Lifetime of short-period binaries measured from their Galactic kinematics](#)
2020, MNRAS, 493, 2271-2286
<https://ui.adsabs.harvard.edu/abs/2020MNRAS.493.2271H/abstract>
- [10] **Hwang, H.-C.**; Shen, Y.; Zakamska, N. L.; Liu, Xin:
[Varstrometry for Off-nucleus and Dual sub-Kpc AGN \(VODKA\): Methodology and Initial Results with Gaia DR2](#)
2020, ApJ, 888, 73
<https://ui.adsabs.harvard.edu/abs/2020ApJ...888...73H/abstract>
- [9] Shen, Y.; **Hwang, H.-C.**; Zakamska, N. L.; Liu, Xin:
[Varstrometry for Off-nucleus and Dual sub-Kpc AGN \(VODKA\): How Well-centered Are Low-z AGN?](#)
2019, ApJL, 885, L4
<https://ui.adsabs.harvard.edu/abs/2019ApJ...885L...4S/abstract>
- [8] Lee, C.-F.; Kwon, W.; Jhan, K.-S.; Hirano, N.; **Hwang, H.-C.**; Lai, S.-P.; Ching, T.-C.; Rao, R.; Ho, P. T. P.
[A Pseudodisk Threaded with a Toroidal and Pinched Poloidal Magnetic Field Morphology in the HH 211 Protostellar System](#)
2019, ApJ, 879, 101
<https://ui.adsabs.harvard.edu/abs/2019ApJ...879..101L/abstract>
- [7] Sánchez-Menguiano, L.; Sánchez Almeida, J.; Muñoz-Tuñón, C.; Sánchez, S. F.; Filho, M.; **Hwang, H.-C.**; Drory, N.
[Characterizing the local relation between star formation rate and gas-phase metallicity in MaNGA spiral galaxies](#)
2019, ApJ, 882, 9
<https://ui.adsabs.harvard.edu/abs/2019ApJ...882....9S/abstract>
- [6] **Hwang, H.-C.**; Barrera-Ballesteros, J.; Heckman, T. M.; Rowlands, K.; Lin, L.; Rodriguez-Gomez, V.; Pan, H.-A.; Hsieh, B.-C.; Sanchez, S.; Bizyaev, D.; Sanchez Almeida, J.; Thilker, D. A.; Lotz, J. M.; Jones, A.; Nair, P.; Andrews, B. H.; Drory, N.:
[Anomalously low metallicity regions in MaNGA star-forming galaxies: Accretion Caught in Action?](#)
2019, ApJ, 872, 144
<http://ui.adsabs.harvard.edu/abs/2019ApJ...872..144H>
[astrobites article](#)
- [5] Lee, C.-F.; **Hwang, H.-C.**; Ching, T.-C.; Hirano, N.; Lai, S.-P.; Rao, R.; Ho, P. T. P.:
[Unveiling a magnetized jet from a low-mass protostar](#)
2018, Nature Communications, 9, 4636
<http://ui.adsabs.harvard.edu/abs/2018NatCo...9.4636L>
Media mentions: [Liberty Times Net](#), , [ALMA Kids](#)

[4] Rowlands, K.; Heckman, T.; Wild, V.; Zakamska, N. L.; Rodriguez-Gomez, V.; Barrera-Ballesteros, J.; Lotz, J.; Thilker, D.; Andrews, B. H.; Boquien, M.; Brinkmann, J.; Brownstein, J. R.; **Hwang, H.-C.**; Smethurst, R.:

[SDSS-IV MaNGA: spatially resolved star formation histories and the connection to galaxy physical properties](#)

2018, MNRAS, 480, 2544-2561

<http://ui.adsabs.harvard.edu/abs/2018MNRAS.480.2544R>

[3] **Hwang, H.-C.**; Zakamska, N. L.; Alexandroff, R. M.; Hamann, F.; Greene, J. E.; Perrotta, S.; Richards, G. T.:

[Winds as the origin of radio emission in \$z=2.5\$ radio-quiet extremely red quasars](#)

2018, MNRAS, 477, 830-844

<http://ui.adsabs.harvard.edu/abs/2018MNRAS.477..830H>

[2] Lee, C.-F.; **Hwang, H.-C.**; Li, Z.-Y.:

[Angular momentum loss in the envelope-disk transition region of HH 111 protostellar system: evidence for magnetic braking?](#)

2016, ApJ, 826, 213

<http://ui.adsabs.harvard.edu/abs/2016ApJ...826..213L>

[1] Lee, C.-F.; Rao, R.; Ching, T.-C.; Lai, S.-P.; Hirano, N.; Ho, P. T. P.; **Hwang, H.-C.**:

[Magnetic field structure in the flattened envelope and jet in the young protostellar system HH 211](#)

2014, ApJ, 797, L9

<http://ui.adsabs.harvard.edu/abs/2014ApJ...797L...9L>

Successful Proposals

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska, Vedant Chandra

Gemini Observatory, Program: GN-2020A-FT-103, GS-2020A-FT-101

“Discovery of mass-dependent gravitational redshifts in white dwarfs ”

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska, Yue Shen, Xin Liu

Hubble Space Telescope Cycle 27, Program: 15900

“Discovery of Sub-kpc Dual Active Galactic Nuclei from Gaia”

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska

Gemini Observatory, Program: GN-2018B-FT-115

“A nearby candidate of type Ia supernova progenitor?”

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska

Apache Point Observatory, Program: 1Q2019-JH02

“Search for type Ia supernova progenitors and exotic binaries”

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska, Andy Goulding

XMM-Newton telescope, Program: 84325

“The mysterious IR emitter around a magnetized white dwarf”

P. I.: Hsiang-Chih Hwang

Co-I.: Nadia L. Zakamska, John Thorstensen
Gemini Observatory, Program: GN-2019A-Q-322
“The mysterious infrared emitter around a white dwarf”

P. I.: Hsiang-Chih Hwang

Co-I.: Kirsten Hall, Nadia L. Zakamska
Apache Point Observatory, Program: 4Q2018-JH02
“Search for compact WD-WD binaries and other exotic stellar systems”

Undergraduate Mentorship

Vedant Chandra (2019 Dean's Undergraduate Research Award, 2 papers published)	2018 – present
Evan Petrosky (1 paper submitted)	2019 – present
Gavin Fezenko (1 paper in prep.)	2020 – present
Mansha Kapur	2020 – present
Matt Kleiman	2020 – present
Brandon Stride	2020 – present
Carsten Langholm	2020 – present
Shuchen Zhang	2019

Talks, Conferences, and Workshops

Dissertation talk at 237th AAS, virtual, <i>speaker</i>	Jan 2021
Invited talk at NTNU, Taipei, <i>speaker</i>	Dec 2020
Invited talk at NTHU, Hsinchu, <i>speaker</i>	Dec 2020
Lunch talk at ASIAA, Taipei, <i>speaker</i>	Dec 2020
Wine and Cheese seminar at JHU, Baltimore, <i>speaker</i>	Dec 2019
Bahcall lunch at Institute for Advanced Study, Princeton, <i>speaker</i>	Oct 2019
Lunch talk at ASIAA, Taipei, <i>speaker</i>	Jun 2019
TESS data workshop, Baltimore	Feb 2019
Annual Eastern Coast Quasar Day, Philadelphia, <i>speaker</i>	Feb 2019
Wine and Cheese seminar at JHU, Baltimore, <i>speaker</i>	Sep 2018
Joint meeting of the NASA LISA Study Team and the ESA Science Study Team, Baltimore	Aug 2018
Gaia DR2 exploration lab, Madrid	Jun 2018
Science with Precision Astrometry, Baltimore	Mar 2018
MaNGA collaboration meeting, Campeche, <i>speaker and poster presentation</i>	Dec 2017
MaNGA SciCon, <i>speaker</i>	Nov 2017
Astro Con DC, DC, <i>speaker</i>	Jul 2017
Annual Eastern Coast Quasar Day, Baltimore, <i>speaker</i>	Feb 2017
TIARA Summer School on Numerical Astrophysics, Taipei	Jul 2015
TIARA Winter School on Cosmology, Taipei	Feb 2014

Skills

- Multi-wavelength astronomy:
- Successful proposals: Hubble Space Telescope, XMM-Newton, Gemini, Apache Point Observatory.
 - Publication: ALMA (single dish and interferometer, emission lines), VLA (interferometer, continuum), optical emission line study, IR time series analysis.
 - Certified Apache Point Observatory user.
 - Time-series analysis, periodograms.

Programming language: C/C++, Python (and its GPU and machine learning packages), Matlab, Mathematica, web-based language (html, css, JavaScript), database server (Ruby on Rails).