

# Pei-Ying Hsieh

## Curriculum Vitae

### Contact Information

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### Citizenship

Taiwan

### Employment

2015 Sep – present	Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA) post-doctoral fellow with Dr. Patrick M. Koch
2015 Sep – present	Atacama Large Millimeter/submillimeter Array (ALMA) Regional Center Member (ARC - Taiwan Node)
2006 – 2008	Research Assistant at ASIAA with Dr. Satoki Matsushita and Dr. Jeremy Lim

### Education

2008~2015 Jul	PhD. Astronomy, National Central University (NCU), Taiwan Doctoral Thesis: “ <i>The Inflow and Outflow in the Galactic centres</i> ”, thesis adviser: Dr. Paul T. P. Ho
2006 Jun	M.Sc. Astrophysics, National Taiwan University (NTU), Taiwan
2004 Jun	B.Sc. Physics, National Taiwan Normal University (NTNU), Taiwan

### Professional Experiences

Observations: **Radio:** Aperture synthesis technique; Single dish observations; Large field mosaic of interferometers (600 pointing mosaic with the ALMA and 157 pointing mosaic with SMA); On-the-Fly (OTF) mapping (Galactic center projects with NRO 45m, JCMT, CSO, GBT, ASTE, ALMA).  
**X-ray:** Chandra X-ray Observatory.  
**Optical:** Taiwan Lulin 1 m telescope.

Numerical simulation: Hydrodynamical simulations with Antares code.

ALMA functional works: I am a member of the ALMA-Taiwan node since 2015. My duties also include the ALMA helpdesk triage, being contact scientist, delivering the quality Assurance 2 (QA2) data including calibration and imaging, weblog review, and preparing ALMA observations for the project PIs. I have ample experiences in preparing the ALMA observations and data calibration.

## Service Tasks

2019 Nov	LOC of Magnetic Fields in the Universe VII conference, Taipei, Taiwan
2018 Sep – present	NRO 45m/ASTE proposal reviewer
2017 Nov	SOC of East Asia Young Astronomer Meeting in Japan
2017 Jun	Technical secretary of ALMA cycle 5 proposal review meeting
2016 Sep	JCMT proposal external reviewer
2015 Sep – present	ARC, East Asia-Taiwan Helpdesk Triage
2012	ALMA Taiwan-ARC assistant
2004 - 2017	Submillimeter Array (SMA) second shift operator at ASIAA

## Observing Experiences (selected for the representative projects)

2017	<b>PI of ALMA cycle 5 proposal (2017.1.00040.S; rank A, top 5% of 1712 proposals; 100 hours for 12 m array and total power array granted for 600 pointing mosaic)</b>
2017	<b>PI of ALMA cycle 4 ACA supplementary proposal (2016.2.00056.S; 37 hours; rank C)</b>
2016	<b>PI of ALMA cycle 4 proposal (2016.1.00147.S; rank B, top 15% of 1571 proposals; 7 hours, 300 pointing mosaic)</b>
2017	PI of JCMT 2017A proposal (granted)
2016	Co-I of ALMA cycle 4 proposal (Rank A: 2016.1.01430.S)
2014	PI of ASTE 10m telescope observations (Rank A)
2013	PI of CSO 10m telescope observations (granted)
2013	PI of ASTE 10m telescope with CATS345 receiver (Rank A)
2013	Co-I of ALMA cycle 2 proposal (2013.1.00126.S)
2012	PI of NRO 45m observations (Rank A)
2012	Co-I of ALMA cycle 1 proposal (2012.1.00621.S)
2011	Co-I of ALMA cycle 0 proposal (2011.0.00235.S)
2011	Co-I of GBT 100m telescope observations
2004 –2013	Duty field operation SMA observing in Mauna Kea; PI of SMA projects

## Workshops/Conferences/Talks

2019 Jul	Invited review talk at IAU symposium "Galactic Dynamics in the Era of Large Surveys" in Shanghai
2018 Aug	XXX IAU General Assembly (posters)
2018 Jul	ASIAA lunch talk
2018 May	2018 Scientific Assembly of the Astronomical Society of the ROC (Oral)
2017 Dec	Invited colloquium talk in National Central University
2017 Dec	East Asia ALMA user meeting in Tokyo (posters)
2017 Oct	Acceptance of Oral presentation in conference "The Role of Gas in Galaxy Dynamics" in Malta
2017 Aug	From Black Hole to Environment Galaxy Evolution Across Multiple Wavelengths in Canberra, Australia (contributed talk and discussion panel)

2017 May	Invited colloquium talk in Seoul National University
2017 May	Invited colloquium talk in National Tsing Hua University
2017 Jan	ALMA band 1 workshop (Oral)
2016 Aug	IAU 322 The Galactic center Messenger (poster)
2012	TIARA Workshop on Star Formation and Its Environment in the Center of Galaxies (Oral)
2011	The XXIII Canary Islands Winter School of Astrophysics: Secular evolution of galaxies (poster)
2010	NRAO Twelfth Synthesis Imaging Workshop (Socorro)

### Teaching and Outreach

2018 Jul	Common Astronomy Software Applications package (CASA) training lecturer in the ALMA training camp in NTHU
2017 Jun	CASA training lecturer in ALMA training camp in NTHU
2016	Supervisor of SMA group project of summer students in ASIAA
2016	CASA training lecturer
2008	Co-supervision of summer student (Ya-Lin Wu) of the ASIAA Summer School (with Dr. Satoki Matsushita and Dr. Jeremy Lim): Topic: Search for Shocks in a Barred Spiral Galaxy NGC 1097
2007	Co-supervision of summer student (Nagisa Oi) of the ASIAA Summer School (with Dr. Satoki Matsushita): Analysis of SMA data (Properties of Molecular Gas around Active Galactic Nuclei).

### Computer Skills and Languages

Systems:	UNIX/LINUX system, WINDOW, MAC OS X
Astronomy Software (selected):	AIPS, CASA, MIR, MIRIAD, CLASS, NOSTAR, NEWSTAR, CIAO
Programming:	IDL, python
Languages:	Chinese (native), English (fluent).

### Research Awards / Grants / Press

2018 Aug	ASIAA and JCMT/EAO press release/newsletter
2012	The awards of student achievements of publication/ National Central University, NTD 25K
2011	Grant for Attending International Conferences / Taiwan National Science Council, NTD 45K
2011 Aug	SMA newsletter
2006	Grant for Attending International Conferences / Taiwan National Science Council, NTD 26.1K

## Publication List

### Refereed publications

- (20) “*A Magnetic Field Connecting the Galactic Center Circumnuclear Disk with Streamers and Mini-spiral - Implications from 850 micron Polarization Data*”  
**Hsieh, Pei-Ying**, Koch, Patrick M., Kim, Woong-Tae, Ho, Paul T. P. , Tang, Ya-Wen, Wang, Hsiang-Hsu  
The Astrophysical Journal, 2018, 862, 150
- (19) “*Molecular gas and Star Formation Properties in Early Stage Mergers: SMA CO(2-1) Observations of the LIRGs NGC 3110 and NGC 232*”  
Espada, D.; Martin, S.; Verley, S.; Pettitt, A. R.; Matsushita, S.; Argudo-Fernandez, M.; Randriamanakoto, Z.; **Hsieh, P.-Y.**; Saito, T.; Miura, R. E.; Kawana, Y.; Sabater, J.; Verdes-Montenegro, L.; Ho, P. T. P.; Kawabe, R.; Iono, D. 2018 accepted for publication in the Astrophysical Journal
- (18) “*SDSS-IV MaNGA-resolved Star Formation and Molecular Gas Properties of Green Valley Galaxies: A First Look with ALMA and MaNGA*”  
Lin, Lihwai; Belfiore, Francesco; Pan, Hsi-An; Bothwell, M. S.; **Hsieh, Pei-Ying**; Huang, Shan; Xiao, Ting; Sánchez, Sebastián F.; Hsieh, Bau-Ching; Masters, Karen; and 14 coauthors  
The Astrophysical Journal, 2017, 851, 18
- (17) “*Molecular Gas Feeding the Circumnuclear Disk of the Galactic Center in the Milky Way*”  
**Hsieh, Pei-Ying**; Koch, Patrick M.; Ho, Paul T. P.; Kim, Woong-Tae; Tang, Ya-Wen; Wang, Hsiang-Hsu, His-Wei Yen, Chrong-Yuan Hwang  
The Astrophysical Journal, 2017, 847, 3
- (16) “*The Fossil Nuclear Outflow in the Central 30 pc of the Galactic Center*”,  
**Hsieh, Pei-Ying**; Ho, Paul T. P.; Hwang, Chorong-Yuan; Shimajiri, Yoshito; Matsushita, Satoki; Koch, Patrick M.; Iono, Daisuke  
The Astrophysical Journal, 2016, 831, 72
- (15) “*Submillimeter-HCN Diagram for Energy Diagnostics in the Centers of Galaxies*”,  
Izumi, Takuma; Kohno, Kotaro; Aalto, Susanne; Espada, Daniel; Fathi, Kambiz; Harada, Nanase; Hatsukade, Bunyo; **Hsieh, Pei-Ying**; Imanishi, Masatoshi; Krips, Melanie ; and 9 coauthors  
The Astrophysical Journal, 2016, 818, 42
- (14) “*ALMA Observations of the Submillimeter Dense Molecular Gas Tracers in the Luminous Type-1 Active Nucleus of NGC 7469*”,

Izumi, Takuma; Kohno, Kotaro; Aalto, Susanne; Doi, Akihiro; Espada, Daniel; Fathi, Kambiz; Harada, Nanase; Hatsukade, Bunyo; Hattori, Takashi; **Hsieh, Pei-Ying**; and 23 coauthors  
The Astrophysical Journal, 2015, 811, 391

- (13) *"The Connecting Molecular Ridge in Galactic center"*,  
**Hsieh, Pei-Ying**; Ho, Paul T. P.; Hwang, Chorng-Yuan  
The Astrophysical Journal, 2015, 811, 142
- (12) *"SiO Emission in the Galactic Center"*,  
Minh, Young Chol; Liu, Hauyu Baobab; Su, Yu-Nung; **Hsieh, Pei-Ying**; Liu, Sheng-Yuan;  
Kim, Sungsoo S.; Wright, Melvyn; Ho, Paul T. P.  
The Astrophysical Journal, 2015, 508, 86
- (11) *"Multi-molecule ALMA observations towards the Seyfert 1 galaxy NGC 1097"*,  
Martin, S.; Kohno, K.; Izumi, T.; Krips, M.; Meier, D. S.; Aladro, R.; Matsushita, S.; Takano,  
S.; Turner, J. L.; Espada, D.; Nakajima, T.; Terashima, Y.; Fathi, K.; **Hsieh, P.-Y.**; Imanishi,  
M.; Lundgren, A.; Nakai, N.; Schinnerer, E.; Sheth, K.; Wiklind, T.  
Astronomy & Astrophysics, 2015, 573, 116
- (10) *"Green Bank Telescope Observations of the NH<sub>3</sub> (3, 3) and (6, 6) Transitions  
toward Sagittarius a Molecular Clouds"*,  
Minh, Young Chol; Liu, Hauyu Baobab; Ho, Paul T. P.; **Hsieh, Pei-Ying**; Su,  
Yu-Nung; Kim, Sungsoo S.; Wright, Melvyn,  
The Astrophysical Journal, 2013, 773, 31
- (9) *"Hydrodynamical Simulations of the Barred Spiral Galaxy NGC 1097"*,  
Lin, Lien-Hsuan; Wang, Hsiang-Hsu; **Hsieh, Pei-Ying**; Taam, Ronald E.;  
Yang, Chao-Chin; Yen, David C. C.  
The Astrophysical Journal, 2013, 771, 8
- (8) *"Submillimeter ALMA Observations of the Dense Gas in the Low-Luminosity Type-I Active  
Nucleus of NGC 1097"*,  
Izumi, Takuma; Kohno, Kotaro; Martin, Sergio; Espada, Daniel; Harada,  
Nanase; Matsushita, Satoki; **Hsieh, Pei-Ying**; Turner, Jean L.; Meier, David  
S.; Schinnerer, Eva; Imanishi, Masatoshi; Tamura, Yoichi; Curran, Max T.;  
Doi, Akihiro; Fathi, Kambiz; Krips, Melanie; Lundgren, Andreas A.;  
Nakai, Naomasa; Nakajima, Taku; Regan, Michael W.; Sheth, Kartik;  
Takano, Shuro; Taniguchi, Akio; Terashima, Yuichi; Tosaki, Tomoka;  
Wiklind, Tommy  
Publications of the Astronomical Society of Japan, 2013, 65, 100
- (7) *"Interstellar Medium Processing in the Inner 20 pc in Galactic Center"*,

Liu, Hanyu Baobab; Ho, Paul T. P.; Wright, Melvyn C. H.; Su, Yu-Nung;  
**Hsieh, Pei-Ying**; Sun, Ai-Lei; Kim, Sungsoo S.; Minh, Young Chol,  
The Astrophysical Journal, 2013, 770, 44

- (6) *“Probing Circumnuclear Environments with the HCN(J = 3-2) and HCO+(J = 3-2) Lines: Case of NGC 1097”*,

**Hsieh, Pei-Ying**; Ho, Paul T. P.; Kohno, Kotaro; Hwang, Chong-Yuan;  
Matsushita, Satoki  
The Astrophysical Journal, 2012, 747, 90

- (5) *“Milky Way Supermassive Black Hole: Dynamical Feeding from the Circumnuclear Environment”*,

Liu, Hanyu Baobab; **Hsieh, Pei-Ying**; Ho, Paul T. P.; Su, Yu-Nung; Wright,  
Melvyn; Sun, Ai-Lei; Minh, Young Chol,  
The Astrophysical Journal, 2012, 756, 195

- (4) *“Physical Properties of the Circumnuclear Starburst Ring in the Barred Galaxy NGC 1097”*,

**Hsieh, Pei-Ying**; Matsushita, Satoki; Liu, Guilin; Ho, Paul T. P.; Oi, Nagisa;  
Wu, Ya-Lin  
The Astrophysical Journal, 2011, 736, 129

- (3) *“Interferometric 12CO J = 2-1 Image of the Nuclear Region of Seyfert 1 Galaxy NGC 1097”*,

**Hsieh, Pei-Ying**; Matsushita, Satoki; Lim, Jeremy; Kohno, Kotaro; Sawada-Satoh, Satoko  
The Astrophysical Journal, 2008, 683, 70

- (2) *“The Ultraluminous X-Ray Sources Near the Center of M82”*,

Kong, A. K. H.; Yang, Y. J. **Hsieh, P.-Y.**; Mak, D. S. Y.; Pun, C. S. J.,  
The Astrophysical Journal, 2007, 671, 349

- (1) *“Submillimeter Array 12CO (J=3-2) Interferometric Observations of the Central Region of M51”*,

Matsushita, Satoki; Sakamoto, Kazushi; Kuo, Cheng-Yu; **Hsieh, Pei-Ying**;  
Dinh-V-Trung; Mao, Rui-Qing; Iono, Daisuke; Peck, Alison B.; Wiedner,  
Martina C.; Liu, Sheng-Yuan; and 2 coauthors  
The Astrophysical Journal, 2004, 616, 55

#### **Newsletter/Press**

- (3). *“Discovering Magnetized Inflow Accreting to the center of Milky Way Galaxy - An important force to transport gas to the supermassive black hole Sagittarius A\*”*

**Hsieh, Pei-Ying**, the East Asian Observatory News, September 2018

(2). *"Discovering Magnetized Inflow Accreting to the center of Milky Way Galaxy - An important force to transport gas to the supermassive black hole Sagittarius A\*"*

**Hsieh, Pei.-Ying**, James Clerk Maxwell Telescope news release, August 2018

(1). *"Physical Properties of the Circumnuclear Starburst Ring In the Barred Galaxy NGC 1097"*

**Hsieh, Pei.-Ying & Ho, P. T. P.**, Submillimeter Array Newsletter, Number 12, August 2011