Curriculum Vitae

Jia-Wei Wang

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Research Interests

Magnetic fields in molecular cloud

Cluster/Core formation within filamentary clouds

Protoplanetary disk evolution

Dust alignment in molecular clouds

Work Experience

2019-present	**Postdoc Fellow** Institute of Astronomy and Astrophysics, Academia Sinica Advisor: Patrick Koch
2019-present	**ARC Postdoc (Data Reducer)** ALMA Regional Center, Taiwan node Advisor: Yu-Nung Su

Education

2012-2019	**Ph.D** Institute of Astronomy, National Tsing Hua University, Taiwan Advisor: Shih-Ping Lai
2010-2012	**M.S.** Institute of Astronomy, National Tsing Hua University, Taiwan "Probing the physical properties and morphological evolution of transition protoplanetary disks" Advisor: Shih-Ping Lai
2005-2010	**B.S.** Department of Physics, National Tsing Hua University, Taiwan Advisor: Shih-Ping Lai

Research Experiences and Skills

Research Project:

ALMAGAL survey	Since 2020
• ALMA molecular line survey toward the 1000+ massive clumps • Aim to probe the gas kinematic characteristics (temperature, infall, rotation..) in order to study filament-to-clump and clump-to-core fragmentation process • Applying machine learning algorithm (DNN) to categorize fragmentating clusters.	
Polarization pattern in the massive Keplerian disk Cep A HW2	Since 2019
• Use SMA polarimetry to resolve the polarization pattern from the outer envelope to the Keplerian disk • Aim to study the origin of the polarization within a massive disk sysytem	
Multi-scale Polarimetry toward the hub-filament system OMC2-FIR4	Since 2019
• Combine the JCMT/SMA/ALMA polarization data to construct a complete view of magnetic fields at physical scale from 0.2 pc to 80 AU	
Magnetic Fields within the hub-filament system G33.92+0.11	2016-2020
• Investigate the origin of hub-filament system • JCMT polarimetry to probe the magnetic field in the surrounding filaments • Reveal interplay between filamentary structures, local gravity, local B-field, and gas kinematics	
JCMT POL-2 B-field Gould Belt Survey (BISTRO survey)	Since 2015
• Aim to probe the B-field within star forming regions in intermediate scale (subparsec to thousands AU) using JCMT polarimetry • Lead the IC5146 (published) and NGC2264 first look paper • Member of the data reduction team	
Multi-wavelength stellar polarimetry of the filamentary cloud IC5146	2012-2018
• Aim to probe the B-fields in filamentary clouds • Using optical (TRIPOL in Lulin and AIMPOL in ARIES) and NIR (Mimir in Perkins	

Telescope) stellar polarimetry data • Cooperate with molecular line data to trace gas kinematic (ARO, CSO, JCMT)	
Probing the physical properties and morphological evolution of transition protoplanetary disks (Master thesis)	2008 - 2012
• Aim to investigate the disk evolution using c2d data • Estimated disks properties using SED fitting • Evolutionary trend of protoplanetary disks based on statistic of c2d samples	

Awarded PI proposals from telescopes

- ALMA
  - 2017 (cycle 5) “How the magnetic field impact on the formation of hub-filament system G33.92+0.11” (grade C, non-standard)
  - 2016 (cycle 4) “How the magnetic field regulates the formation of hub-filament system G33.92+0.11” (grade B, non-standard)
- JCMT
  - 2018B “How the magnetic field impact on the formation of hub-filament system G33.92+0.11” (Tier 1)
  - 2017B “How the magnetic field impact on the formation of hub-filament system G33.92+0.11” (Tier 2)
- SMA
  - 2019, 2020 “Resolve the polarization morphology from the envelope to the Keplerian disk at 200 AU scale in the massive protostar Cep A HW2” (Rank A)
  - 2019 “Probe the multi-scale magnetic fields within the intermdiate mass hub-filament system OMC2-FIR4” (Rank B)
- CSO
  - 2014 “Evaluating the role of magnetic fields in filamentary clouds, IC5146”

- Arizona Radio Observatory
  - 2013 “Evaluating the role of magnetic fields in filamentary clouds”
- Aryabhatta Research Institute of Observational Sciences (ARIES)
  - 2013 “Evaluating the role of magnetic fields in filamentary clouds”

Experience in Observation and Data Reduction

Optical:	Lulin TRIPOL polarimetry, ARIES AIMPOL polarimetry
Infrared:	Mimir polarimetry
Radio (single dish):	ARO 12M telescope spectroscopy, CSO spectroscopy, Nobeyama 45M spectroscopy, JCMT spectroscopy, image, and polarimetry
Radio (Interferometer):	ALMA data reduction, SMA polarimetry

Software and Data analysis skill

CASA, Starlink Software, MIR, MIRIAD, C language, Python, Bayesian analysis, Machine Learning (DNN) using Keras

Professional Service

- LOC, “East-Asian ALMA Science Workshop 2019”
- SMA remote operator, ASIAA, 2017-2018
- Teaching Assistant, “CASA Tutorial,” 2017 ALMA Summer Training Camp
- Teaching Assistant, “CASA Tutorial,” 2016 ALMA Summer Training Camp
- High School Research Project, Taipei First Girls High School, 2013
- Teaching Assistant, “Fundamentals of Observational Astronomy,” Institute of Astronomy, NTHU 2009-2011

Awards

- Graduate Fellowship, University Consortium of ALMA-Taiwan, 2018-2019

Publications

Journal Publications:

- **Wang, Jia-Wei**; Koch, Patrick M.; Galván-Madrid, Roberto; Lai, Shih-Ping; Liu, Hauyu Baobab; Lin, Sheng-Jun; Pattle, Kate "Formation of the Hub-Filament System G33.92+0.11: Local Interplay between Gravity, Velocity, and Magnetic Field", Accepted for publication in ApJ
- Eswaraiah, Chakali; Li, Di; Samal, Manash R.; **Wang, Jia-Wei**; Ma, Yuehui, et al. "Unveiling the importance of magnetic fields in the evolution of dense clumps formed at the waist of bipolar H II regions: a case study on Sh2-201 with JCMT SCUBA-2/POL-2", Accepted for publication in ApJ
- Doi, Yasuo; Hasegawa, Tetsuo; Furuya, Ray S., et al. [135 authors including **Wang, Jia-Wei**], "The JCMT BISTRO Survey: Magnetic Fields Associated with a Network of Filaments in NGC 1333", 2020, ApJ, 899, 28D
- **Wang, Jia-Wei**, Lai, Shih-Ping, Clemens, Dan P., Eswaraiah, Chakali, Chen, Wen-Ping, & Pandey, Anil K., "The Multi-Wavelength Polarimetry in the Filamentary Cloud IC5146: II. Magnetic Field Structure", 2020, ApJ, 888, 13W
- Pattle, Kate; Lai, Shih-Ping; Hasegawa, Tetsuo; **Wang, Jia-Wei**; Furuya, Ray S., et al. "JCMT BISTRO Survey Observations of the Ophiuchus Molecular Cloud: Dust Grain Alignment Properties Inferred Using a Ricean Noise Model", 2019, ApJ, 880, 27P
- **C**oudé, Simon; Bastien, Pierre; Houde, Martin, et al. [131 authors including **Wang, Jia-Wei**], "The JCMT BISTRO Survey: The Magnetic Field of the Barnard 1 Star-forming Region", 2019, ApJ, 877, 88C
- Liu, Junhao, et al. [131 authors including **Wang, Jia-Wei**], "The JCMT BISTRO Survey: The Magnetic Field in the Starless Core ρ Ophiuchus C", 2019, ApJ, 877, 43L
- **Wang , Jia-Wei**, Lai, Shih-Ping, Eswaraiah, Chakali, et al. "JCMT BISTRO Survey : Magnetic Fields Within the Hub-Filament Structure in IC5146", 2019, ApJ, 876, 42W
- Soam, Archan, et al. [124 authors including **Wang, Jia-Wei**], "Magnetic Fields toward Ophiuchus-B Derived from SCUBA-2 Polarization Measurements", 2018,

ApJ, 861, 65

- Kwon, Jungmi, et al. [121 authors including **Wang, Jia-Wei**], "A First Look at BISTRO Observations of the ρ Oph-A core," 2018, ApJ, 859, 4
- Eswaraiah, Chakali, Lai, Shih-Ping, Chen, Wen-Ping, Pandey, A. K., Tamura, M., Maheswar, G., Sharma, S., **Wang, Jia-Wei**, Nishiyama, S., Nakajima, Y., Kwon, Jungmi, Purcell, R., Magalhães, A. M. "Understanding the Links among the Magnetic Fields, Filament, Bipolar Bubble, and Star Formation in RCW 57A Using NIR Polarimetry," 2017, ApJ, 850, 195
- **Wang, Jia-Wei**; Lai, Shih-Ping; Eswaraiah, Chakali; Clemens, Dan P.; Chen, Wen-Ping; Pandey, Anil K. "Multiwavelength Stellar Polarimetry of the Filamentary Cloud IC5146. I. Dust Properties," 2017, ApJ, 849, 157
- Ward-Thompson, Derek, et al. [114 authors including **Wang, Jia-Wei**], "First Results from BISTRO: A SCUBA-2 Polarimeter Survey of the Gould Belt," 2017, ApJ, 842, 66

Proceedings:

- **Wang, Jia-Wei**; Eswaraiah, Chakali; Lai, Shih-Ping; Clemens, D. P.; Chen, Wen-Ping; Pandey, Anil K. "Probing the magnetic field structure in the filamentary cloud IC5146," IAUS, 315, 80