

CURRICULUM VITAE

Ming-Tang Chen, Ph.D., Physics

Research Fellow

Deputy Director of ASIAA Hawaii Operations

Academia Sinica, Institute of Astronomy and Astrophysics

(Taiwan) PO Box 23-141, Taipei, Taiwan, ROC

(USA) 645 N. A'ohoku Place, Hilo, HI 96720, USA

Telephone (TW): +886-2-2366-5348

Telephone (US): +1-808-938-4708

Email: mtchen@asiaa.sinica.edu.tw

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BRIEF BIOGRAPHY:

Ming-Tang Chen was born in Tainan, Taiwan, Republic of China. He received his BS degree in physics from National Cheng Kung University in 1986. After two years of military service and one year of working as a teaching assistant, he came to US to pursue higher education. Mentored by Professor Jack Mochel, he studied the phenomena concerning the phase transition in two-dimensional superfluids, and received his MS & Ph.D. degrees in physics from University of Illinois at Urbana-Champaign in 1990 and 1993, respectively. He did one term of post-doctoral research with Professor Arnold J. Dahm in Case Western Reserve University in Cleveland, Ohio, USA studying pattern formations in liquid helium isotope mixtures. In 1995, he shifted his field and joined the Institute of Astronomy & Astrophysics, Academia Sinica (ASIAA), Taiwan to work on the Sub-Millimeter Array. Since then, he built up ASIAA's technical branch and led the teams to establish the core technologies for instrumentation. He has been the technical leader in most, if not all, radio instrumentation projects. He has personally recruited and mentored half of the staff in ASIAA's technical groups and brought positive impacts to ASIAA through completing projects in time and enabling scientific research in the Submillimeter Array, Array for Microwave Background Anisotropy, Atacama Large Millimeter Array, and the Greenland Telescope projects.

PERSON DATA:

Date of birth:	January 28, 1964
Home address:	Hilo, HI 96720, U.S.A
Home phone:	Upon request
Social security:	Upon request
Marital status:	Married with 2 children

EDUCATION:

1989 – 1993	University of Illinois at Urbana-Champaign, USA, Ph.D. in Physics
1982 – 1986	National Cheng Kung University, Taiwan. B.S. in Physics

KNOWLEDGE & SKILLS:

Helium super fluidity, cryogenics, submillimeter-wave technology, radio telescope technology, solid-state mm and microwave technology, quasi-optics technique, fast digital circuitry, Fortran, C, python, Mathematica, and machine learning.

PROFESSIONAL TITLES:

2003 – Present	Deputy Director of ASIAA Hawaii Operations
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2014 – 2015	Acting Deputy Director of JCMT under EAO management
2007 – Present	Adjunct Professor in Physics Department, National Cheng Kung University
2004 – Present	Research Fellow (tenured), ASIAA
2004	Adjunct Associate Professor in Astronomy Department, National Taiwan University
1999 – 2004	Associate Research Fellow, ASIAA
1996 – 1999	Assistant Research Fellow, ASIAA
1995 – 1996	Visiting Scientist, Smithsonian Astrophysical Observatory (“SAO”), USA
1993 – 1995	Research Associate (Physics), Case Western Reserve University, Cleveland, Ohio, USA
1988 – 1989	Teaching Assistant, National Cheng Kung University, Taiwan
1986 – 1988	Army Communication Officer, Mandatory Military Service, Taiwan

COMMITTEE SERVICE:

2017	Science Organization Committee: Cross-Strait Advanced Telescope & Instrument Technology Conference
2016	Site visiting committee for financial support for Chinese astronomical observatories
2016 – Present:	The JCMT New Instrumentation Panel
2015 – Present:	The James Clerk Maxwell Telescope Board.
2015	Science Organization Committee: Cross-Strait Advanced Telescope & Instrument Technology Conference
2015	Co-Chair SCAR/AAA Working Group B: Arctic Site Testing. (SCAR: Science Committee on Antarctic Research. AAA: Astronomy and Astrophysics from Antarctica).
2015	LOC for the Third Workshop of the SCAR AAA, < http://www.astronomy.scar.org/AAA2015/ >.
2014	Executing Committee for JCMT transition under East Asia Observatory management.
2009 – 2014	Advisory Committee for the Electrical Engineering Department, Nat’l Central University, Taiwan
2005	The Observer for the Preliminary Design Review (PDR) on the Atacama Compact Array, at the National Astronomical Observatory Japan in Mitaka, Japan, Nov 10-11, 2005.
2005	The Review Panel for the Delta Preliminary Design Review (delta-PDR) on the Atacama Large Millimeter Array,

Front-end System, at the European Southern Observatory in Garching, Germany, July 6-7, 2005.

- 2005 The Observer for the Preliminary Design Review (PDR) on the Atacama Large Millimeter Array, Front-end System, Band-4 and Band-8, at the National Astronomical Observatory Japan in Mitaka, Japan, June 21-24, 2005.
- 2002 ASIAA Director Searching Committee

GRANT EXECUTED:

YEARS	ROLE	PROJECT/FUNDING CODE	TOTAL BUDGET
2014 - Ongoing	Principle Investigator	“Observing black holes from Greenland”, MOST: 103-2515-S-001-003-MY3	~ NT\$ 6,500,000
2010 - 2015	Co-PI	“Atacama Large Millimeter Array – Taiwan,” MOST: 99-2119-M-001 - 002 -MY4	NT\$335,050,000
2010 - 2013	Co-PI	“Submm VLBI Site Survey,” 99-2112-M-001 -010 -MY3	NT\$2,266,000
2009 - 2014	Co-PI	“Yuan-Tse Lee Array for Microwave Background Anisotropy,” MOST 98-2119-M-001 -024 -MY4	NT\$58,000,000
2007 - 2009	Co-PI	“COSPA – AMiBA Construction and Data Collection,” MOST 96-2752-M-001 -008 –PAE	NT\$26,934,000
2007 - 2012	Co-PI	“Atacama Large Millimeter Array – Taiwan,” MOST 96-2911-M-001 - 005 -MY3	NT\$237,600,000
2006 - 2007	Co-PI	“COSPA – AMiBA Construction and Data Collection,” MOST 95-2752-M-001 -004 –PAE	NT\$26,855,000
2006 - 2011	Co-PI	“Atacama Large Millimeter Array – Taiwan,” 95-2745-M-001 -001 -	NT\$58,400,000
2005 - 2006	Co-PI	“COSPA – AMiBA Construction and Data Collection,” MOST 94-2752-M-001 -004 –PAE	NT\$28,355,000
2004 - 2005	Co-PI	“COSPA – AMiBA Construction and Data Collection,” MOST 93-2752-M-001 -004 –PAE	NT\$35,767,000

2000- 2003	Co-PI	“COSPA – Array for Microwave Background Anisotropy,” The Ministry of Education	NT\$99,000,000
1999 - 2000	PI	“The development and applications of a novel alignment method using millimeter wave technique,” MOST 89 -2213-E-001 -018 -	NT\$385,800
1998 - 1999	PI	“The development and applications of a novel alignment method using millimeter wave technique,” MOST 88 -2218-E-001 -001 -	NT\$855,900
1997 - 1998	Co-PI	“Radio Astronomy Development – The Integration of submillimeter receivers,” MOST 87-2112-M-001 -037 -	NT\$970,900
1997 - 1998	Co-PI	“Interferometric study of the chemistry of interstellar dust in dense molecular clouds,” MOST 87-2112-M-003 -007 -	NT\$366,700
1997- 1998	PI	“The Applications of near-field Full-wave Transformation in Submillimeter Region,” MOST 87 -2213-E-001 -028 -	NT\$445,200
1996 - 1997	Co-PI	“Radio Astronomy Development – The Integration of submillimeter receivers,” 86-2112-M-001 -034 -	NT\$1,097,300
1996 - 1997	Co-PI	“Radio Astronomy Development,” MOST 86-2732-M-001 -007 -	NT\$1,200,000

INTERNATIONAL INVITED TALKS:

2016	The 2016 URSI Asia-Pacific Radio Science Conference, “Next Generation Heterodyne Array for James Clerk Maxwell Telescope,” Seoul, Korea, 21-15, 2016.
2015	The East Asia Receiver Workshop, on the title “Instrumentation Opportunities with the James Clerk Maxwell Telescope,” Nanjing, China, November 23- 26, 2015.
2012	The 23rd International Symposium on Space Terahertz and Technology, on the title “The Yuan-Tseh Lee AMiBA” , Tokyo, April 2-4, 2012.

- 2008 Global Symposium on Millimeter Waves, Nanjing, China, April 21-24, 2008, on the title of “From Millimeter-wave Technology to Cosmology – The AMiBA Telescope”.
- 2006 International Conference on Physics Education and Frontier Physics, Taipei, Taiwan, 2006 June 27-30, on the title of “The Array for Microwave Background Anisotropy”.
- 2004 Asia-Pacific Microwave Conference, National Taiwan University, Taipei, Taiwan, Dec. 3-6, 2004, on the title of “Developments of Mm and Sub-mm Wavelength Radio Telescope in Taiwan”.
- 2001 Asia-Pacific Radio Science Conference, Chuo University, Tokyo, Japan, Aug. 1-4, 2001, on the title of “The SMA in Taiwan: A progress Report”.

CURRENT AND PAST RESEARCH TOPICS:

- Submillimeter VLBI
- Radio telescope nutator
- Photonic laser synthesizer as a stable mm-wave source
- Low-noise millimeter-wave device using mHEMT process
- Photogrammetry and Stewart Platform
- Millimeter-wave components for radio imaging
- Fast digital circuitry for signal processing
- Array for Microwave Background Anisotropy
- Sub-millimeter Array receiver and antennas construction
- Radio-wavelength alignment technique using near-field beam measurements
- Beam pattern characterization for the Sub-millimeter Array Receivers
- Two-dimensional superfluid He-4 on weak binding substrates (Ar, Xe, H₂)
- Directional solidification in He₃-He₄ mixtures

PUBLICATIONS:

Refereed Papers:

1. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole,” ApJL, 875:L1 (17pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab0ec7>
2. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. II. Array and Instrumentation,” ApJL, 875:L2 (28pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab0c96>

3. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. III. Data Processing and Calibration,” *ApJL*, 875:L3 (32pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab0c57>
4. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. IV. Imaging the Central Supermassive Black Hole,” *ApJL*, 875:L4 (52pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab0e85>
5. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. V. Physical Origin of the Asymmetric Ring,” *ApJL*, 875:L5 (31pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab0f43>
6. The Event Horizon Telescope Collaboration, “First M87 Event Horizon Telescope Results. VI. The Shadow and Mass of the Central Black Hole,” *ApJL*, 875:L6 (44pp), 2019 April 10. <https://doi.org/10.3847/2041-8213/ab1141>
7. J. Kim, ... **Ming-Tang Chen**, et al, “The 1.4 mm core of Centaurus A: First VLBI results with the South Pole Telescope,” *ApJ*, accepted for publication, 2018.
8. S. Matsushita, ... **M.-T. Chen**, et al, “3.5-year Monitoring of 225 GHz Opacity at the Summit of Greenland,” *PASJ*, **129**, 025001 (2017).
9. Kai-Yang Lin, ... **Ming-Tang Chen**, et al.,”AMiBA: Cluster Sunyaev-Zel’dovich Effect Observations with the Expanded 13-Element Array,” *ApJ*, 830:91(21pp), October 2016.
10. H. Jiang, C.Y. Yu, D. Kubo, **Ming-Tang Chen**, and K. Guzzino, “A low cost 4-bit 10 Giga-sample per second ADC PCB assembly for FPGA-based backend,” *PASP*, **128**, 115002, Sept 2016. (<https://doi.org/10.1088/1538-3873/128/969/115002>)
11. H. Hirashita, ... **M.-T. Chen**, ..et al., “First-generation science cases for ground-based terahertz telescopes,” *PASJ* 68, RI (Feb 2016)
12. Han-Chih Yeh, Ching-Chau Chiong, **Ming-Tang Chen** and Huei Wang, "Advances in Silicon Based Millimeter-Wave Monolithic Integrated Circuits," *Micromachines*, 5(4), 1373-1415, December 10, 2014. (<http://www.mdpi.com/2072-666X/5/4/1373>)
13. Han-Chih Yeh, Ching-Chau Chiong, **Ming-Tang Chen** and Huei Wang, "Review of Millimeter-Wave MMIC Mixers," *IEEE Design & Test*, 31 (6), 1-8, December, 2014. (<http://dx.doi.org/10.1109/MDAT.2014.2360451>)
14. Jiang Homin, Liu Howard, Guzzino Kim, Kubo Derek, Chang Ray, **Chen Ming-Tang**, “A 5 Giga Samples Per Second 8-Bit Analog To Digital Printed Circuit Board For Radio Astronomy”, *Publications of the Astronomical Society of the Pacific*, 126(942), 761-768, August 2014. (<http://dx.doi.org/10.1086/677799>)
15. Inoue M., .. **Ming-Tang Chen**, et al, “Greenland Telescope Project: Direct Confirmation of Black Hole with Sub-millimeter VLBI”, *Radio Science*, 49(7), 564–571, July 2014. (<http://dx.doi.org/10.1002/2014RS005450>)
16. Kneifel, S., ... **Ming-Tang Chen**, et al., “Absorption Properties of Supercooled Liquid Water between 31 and 225 GHz: Evaluation of Absorption Models Using

- Ground-Based Observations”, *J. Appl. Meteor. Climatol.*, **53**, 1028–1045, April 2014. (<http://dx.doi.org/10.1175/JAMC-D-13-0214.1>)
17. Kubo D., Srinivasan R., Kiuchi H., and **Chen M-T**, “Development of a Mack-Zehnder Modulator Photonic Local Oscillator Source”, *IEEE Trans. MTT* 61(8), 3005-3014, Aug. 2013. (<http://dx.doi.org/10.1109/TMTT.2013.2268460>)
 18. Liao Y-W....; **Chen M-T**;, et al, "Platform Deformation Phase Correction for the AMiBA-13 Coplanar Interferometer" , *ApJ*: 769(1), 71, May, 2013. (<http://dx.doi.org/10.1088/0004-637X/769/1/71>)
 19. Huang Y-D; Raffin P; **Chen MT**, "*Stiffness study of a hexapod telescope platform*", *IEEE Trans Antenn Propag*: 59(6), 2022-2028, June, 2011.
 20. Koch PM; Raffin P; Huang Y-D; **Chen M-T**; Han C-C; Lin K-Y; Altamirano P; ...; Ho PTP; ...; Li C-T; Liao Y-W; Liu G-C; Nishioka H; ...; Oshiro P; Umetsu K; et al., "1.2 m Shielded Cassegrain Antenna for Close-Packed Radio Interferometer" , *PASP*: 123(900), 198-212, Feb, 2011.
 21. Li CT; .. **Chen MT**, et al, "AMiBA Wideband Analog Correlator", *ApJ*: 716(1), 746-757, June 10, 2010.
 22. Liao Y-W; **Chen M-T**, et al "Contamination of the Central Sunyaev-Zel'dovich Decrements in AMiBA Galaxy Cluster Observations" , *ApJ*: 720(1), 608-613, Sept, 2010.
 23. Huang CWL...**Chen MT** et al., "AMiBA: scaling relations between the integrated Compton- γ and X-ray derived temperature, mass, and luminosity" , *ApJ*: 716(1), 758-765, June 10, 2010
 24. **M.-T. Chen**, et al“ AMiBA: Broadband Heterodyne CMB Interferometry”, *ApJ* 694, 1664-1669, April 1 2009.
 25. P.T.P. Ho, .. , **M.-T. Chen**, et al, “The Yuan-Tseh Lee Array for Microwave Background Anisotropy”, *ApJ*, 694, 1610-1618, April 1 2009.
 26. P.M. Koch, .. **M.-T. Chen**, et al, "The AMiBA Hexapod Telescope Mount", *ApJ*, 694, 1670-1684, 2009, April 1.
 27. K. Umetsu, .. **M. T. Chen**, et al, "Mass and Hot Baryons in Massive Galaxy Clusters from Subaru Weak Lensing and AMiBA Sunyaev-Zel'dovich Effect Observations", *ApJ*, 694, 1643-1663, 2009, April 1.
 28. H. Nishioka, .. **M. T. Chen**, et al, "Tests of AMiBA Data Integrity", *ApJ*, 694, 1637-1642, 2009, April 1.
 29. K.-Y. Lin, .. **M. T. Chen**, et al, "AMiBA: System Performance", *ApJ*, 694, 1629-1636, 2009, April 1.
 30. J.H.P. Wu, .. **M. T. Chen**, et al, "Array for Microwave Background Anisotropy: Observations, Data Analysis, and Results for Sunyaev-Zel'Dovich Effects" *ApJ*, 694, 1619-1628, 2009, April 1
 31. Y.-J. Hwang, R. Rao, R. Christensen, **M.-T. Chen**, T.-H Chu, “Submillimeter-Wave Phasor Beam-Pattern Measurement Based on Two-Stage Heterodyne Mixing With Unitary Harmonic Difference”, *IEEE Trans. MTT* 55(6),1200-1208, Jun 2007.

32. M.I. Goksu, M. Kim, **M.T. Chen**, K.A. Mantey, J.A. Castiglione, and A.J. Dahm, "Partially Screened Edgemagnetoplasmons," *Physica B* 329-333, 268 (2003)
33. **M. T. Chen**, C. E. Tong, S. Paine, and R. Blundell, "Characterization of Corrugated Feed Horns at 216 and 300 GHz," *International Journal of Infrared and Millimeter Waves*, Vol. 18, No.9, pp. 1697-1710, 1997, September.
34. **M. T. Chen** and A.J. Dahm, 1995, "An Optical Cell for Observing Melting Curve of Helium," *Cryogenics*, Vol. 35, p. 71, 1995.
35. Jack M. Mochel and **Ming-Tang Chen**, "Super-fluid Helium on Solid Hydrogen," *Physica B* 197, pp. 278-282, 1994.
36. **M. T. Chen**, J. M. Roesler and J. M. Mochel, 1992, "Extraordinary Behavior of ^4He on Hydrogen and Deuterium Surface," *Journal of Low Temperature Physics*, Vol. 89, No. 1/2, pp. 125-134, 1992.

CONFERENCE PROCEEDINGS:

1. **Ming-Tang Chen**, et al, "The Greenland Telescope – Thule Operations," to appear in Proceeding SPIE, Austin TX 2018.
2. Chih-Chiang Han, **Ming-Tang Chen**, et al., "The First-Light Receiver for the Greenland Telescope," to appear in Proceeding SPIE, Austin TX 2018.
3. Hiroaki Nishioka, et al, "Control and Monitoring System for the Greenland Telescope: Computers, Network and Software," to appear in Proceeding SPIE, Austin TX 2018.
4. Daniel Bintley, et al, "GLT receiver commissioning at JCMT and future JCMT," to appear in Proceeding SPIE, Austin TX 2018.
5. Satoki Matsushita, et al, "Commissioning Status of the Greenland Telescope," to appear in Proceeding SPIE, Austin TX 2018.
6. Derek Kubo, et al, "Electronic Instrumentation for the Greenland Telescope," to appear in Proceeding SPIE, Austin TX 2018.
7. Wei-Long Chen & **Ming-Tang Chen**, "Dynamic Characteristics and Design of the ALMA Nutator," in Proceeding 2018 2nd International Conference on Mechatronics and Mechanical Design, Auckland, New Zealand, April 2018.
8. **Ming-Tang Chen**, et al., "Next generation heterodyne array for JCMT," in Proceedings Volume 9914: Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VIII, August 2016.
9. Philippe Raffin, ... **Ming-Tang Chen**, et al., "The Greenland Telescope: antenna retrofit status and future plans," in Proceedings Volume 9906: Ground-based and Airborne Telescopes VI, October 2016.
10. Jessica T. Dempsey, ... **Ming-Tang Chen**, et al. "The JCMT future instrument project," in SPIE Proceedings Volume 9908: Ground-based and Airborne Instrumentation for Astronomy VI, December 2016.
11. Jessica T. Dempsey, ... **Ming-Tang Chen**, et al., "The JCMT as operated by the East Asian Observatory: a brief (but thrilling) history," in SPIE Proceedings

Volume 9910: Observatory Operations: Strategies, Processes, and Systems VI, August 2016.

12. Chao-Te Li, ... **Ming-Tang Chen**, et al., "Development of digital sideband separating down-conversion for Yuan-Tseh Lee Array," in SPIE Proceedings Volume 9914: Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VIII, August 2016.
13. Paul Grimes, ... **M.-T Chen**, et al., "Instrumentation for single-dish observations with The Greenland Telescope," in Proceedings Volume 9153: Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VII, August 2014.
14. Pierre L. Martin-Cocher, ... **Ming-Tang Chen**, et al., "225 GHz opacity measurements at Summit camp, Greenland for the Greenland Telescope (GLT) site testing," in SPIE Proceedings Volume 9147: Ground-based and Airborne Instrumentation for Astronomy V, August 2014.
15. Keiichi Asada, ... **Ming-Tang Chen**, et al., "Opacity measurements at Summit Camp on Greenland and PEARL in northern Canada with a 225 GHz tipping radiometer," in SPIE Proceedings Volume 8444: Ground-based and Airborne Telescopes IV, August 2012.
16. Pierre Martin-Cocher, ... **Ming-Tang Chen**, et al., "ALMA nutator design and preliminary performances," in SPIE Proceedings Volume 8452: Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VI, August 2012.
17. Homin Jiang, Ming-Tang Chen, and Johnson Han, "Control Characteristics of the ALMA Nutator," in Proceeding 2010 IEEE International Conference on Control Applications, Yokohama Japan, September 2010.
18. Yau-De Huang, ... **Ming-Tang Chen**, et al., "Photogrammetry measurement of the AMiBA 6-meter platform," in SPIE Proceedings Volume 7012: Ground-based and Airborne Telescopes II, August 2008.
19. Kai-yang Lin, ... **Ming-Tang Chen**, et al., "AMiBA first year observation," in SPIE Proceedings Volume 7012: Ground-based and Airborne Telescopes II, August 2008.
20. Yuh-Jing Hwang, ... **Ming-Tang Chen**, et al., "Cryogenic testing and multi-chip module design of a 31.3-45GHz MHEMT MMIC-based heterodyne receiver for radio astronomy," in SPIE Proceedings Volume 7020: Millimeter and Submillimeter Detectors and Instrumentation for Astronomy IV, August 2008.
21. Patrick Koch, ... **Ming-Tang Chen**, et al., "Platform deformation refined pointing and phase correction for the AMiBA hexapod telescope," in SPIE Proceedings Volume 7018: Advanced Optical and Mechanical Technologies in Telescopes and Instrumentation, July 2008.
22. Chao-Te Li, ... **Ming-Tang Chen**, et al., "Initial operation of the array for microwave background anisotropy(AMiBA)," in SPIE Proceedings Volume 6275: Millimeter and Submillimeter Detectors and Instrumentation for Astronomy III, June 2006.

23. Philippe Raffin, ... **Ming-Tang Chen**, et al., “Progress of the array of microwave background anisotropy (AMiBA),” in SPIE Proceedings Volume 6273: Opto-mechanical Technologies for Astronomy, July 2006.
24. Chao-te Li, ... **Ming-Tang Chen**, et al., “A wideband analog correlator system for AMiBA,” in SPIE Proceedings Volume 5498: Millimeter and Submillimeter Detectors for Astronomy II, October 2004.
25. Yuh-Jing Hwang, ... **Ming-Tang Chen**, et al., “W-band dual-polarization receiver for array of microwave background anisotropy (AMiBA),” in SPIE Proceedings Volume 5498: Millimeter and Submillimeter Detectors for Astronomy II, October 2004.
26. Philippe A. Raffin, ... **Ming-Tang Chen**, et al., “CFRP platform and hexapod mount for the Array of MICrowave Background Anisotropy (AMiBA),” in SPIE Proceedings Volume 5495: Astronomical Structures and Mechanisms Technology, September 2004.
27. **Ming-Tang Chen**, et al., “Full-Polarization W-band receiver for CMB detection,” in SPIE Proceedings Volume 4855: Millimeter and Submillimeter Detectors for Astronomy, February 2003.
28. **Ming-Tang Chen**, et al., “Progress report on the Sub-Millimeter Array in Taiwan: The receiver system,” in SPIE Proceedings Volume 4015: Radio Telescopes, July 2000.
29. Philippe Raffin, ... **Ming-Tang Chen**, et al., “Taiwanese antennas for the Sub-Millimeter Array: a progress report,” in SPIE Proceedings Volume 4015: Radio Telescopes, July 2000.
30. **Ming-Tang Chen**, et al., “Receiver-beam characterization for the SMA,” in SPIE Proceedings Volume 3357: Advanced Technology MMW, Radio, and Terahertz Telescopes, July 1998.

OTHERS:

- Most recent public talk on the Greenland Telescope and the shadow of black holes. <https://youtu.be/vNK3C24GdjE> (In Chinese)
- My professional profile: <https://youtu.be/lB7KGef2C5A> (In Chinese)
- Featured in media documentary, 東森新聞 CH51, “百年孤寂 - 聚焦格陵蘭,” <https://youtu.be/KkSSk5zEVC0> (English subtitled)
- AS Press Release, “在北極看見黑洞 格陵蘭望遠鏡開啟天文新頁,” May 27, 2018, in ASIAA.
- Media documentary, 民視異言堂-3, “雲頂看世界”, March, 2011, <https://youtu.be/Q9rMdWiXTDY>.
- Media documentary, National Geographic Channel, “綻放真台灣 4- 星空搜捕手”, September 27, 2011. <https://youtu.be/nrNMz7AUCyo>.
-