Kiyoshi Wesley Masui

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Degrees

Ph.D., Physics, University of Toronto, advisor: Ue-Li Pen — 2013

B.Sc.E., Engineering Physics, Queen's University at Kingston — 2008

Professional Appointments

Associate Professor, Department of Physics, Massachusetts Institute of Technology — 2023 – present

Assistant Professor, Department of Physics, Massachusetts Institute of Technology — 2018 – 2023

Canadian Institute for Theoretical Astrophysics National Fellow, Department of Physics and Astronomy, University of British Columbia — 2016 – 2018

Canadian Institute for Advanced Research Global Scholar, Department of Physics and Astronomy, University of British Columbia — 2013 – 2015

Postdoctoral Fellow, Department of Physics and Astronomy, University of British Columbia — 2013 – 2018

External Positions

Project Scientist, Outriggers, Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst (CHIME/FRB) — 2022 – present

Chair, VLBI Transient Localization Science Working Group, Canadian Hydrogen Observatory and Radio-transient Detector (CHORD) — 2020 – present

Senior Science Group, Canadian Hydrogen Observatory and Radio-transient Detector (CHORD) — 2020 – present

Steering Committee, Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst (CHIME/FRB) — 2020 – present

Science Team, Canadian Hydrogen Intensity Mapping Experiment Fast Radio Burst (CHIME/FRB) — 2015 – present

Science Team, Canadian Hydrogen Intensity Mapping Experiment (CHIME) — 2013 – present

Honors and Awards

Harvey B. Richer Gold Medal for Early Career Research in Astronomy, Canadian Astronomical Society (CASCA) — 2023

Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering to the CHIME Collaboration, Natural Sciences and Engineering Research Council of Canada	2022
Lancelot Berkeley Prize for Meritorious Work in Astronomy to the CHIME/FRB Collaboration, American Astronomical Society	2022
Governor General's Innovation Award to the CHIME Collaboration, Government of Canada	2020
Teaching with Digital Technology Award Nomination, MIT	2019
National Fellow, Canadian Institute for Theoretical Astrophysics	2016 – 2018
Global Scholar, Canadian Institute for Advanced Research	2013 – 2015
Walter C. Sumner Memorial Fellowship, Walter C. Sumner Foundation	2012 – 2013
Van Kranendonk Teaching Award, University of Toronto, Department of Physics	2012
Alexander Graham Bell Canada Graduate Scholar—Doctoral, Natural Sciences and Engineering Research Council of Canada	2010 – 2012
Canada Graduate Scholar—Master's, Natural Sciences and Engineering Research Council of Canada	2008 – 2010

Trainee Supervision

Undergraduate Research Students

Cheng, April	fall 2023 – present
Didehbani, Hannah	spring 2023 – present
Modilim, Obinna	fall 2021 – present
Phoompuang, Panupong	summer 2022 – present
Pannell, Viveca	summer 2022
Cary, Savannah, Fulbright Fellow at U Tokyo then graduate school at UC Berkeley	fall 2020 – fall 2021
Schoen, Eve, graduate school at UC Berkeley	fall 2020 – fall 2021
Russel, Lulu	fall 2019 – spring 2021
Lee, Ellen	fall 2018 – spring 2019

Undergraduate Thesis Students

Cary, Savannah, "Tracking Down Signals From Other Galaxies: Fast Radio Bursts", Fulbright Fellowship at U Tokyo then graduate school at UC Berkeley	2022
Schoen, Eve, "Scintillation of Fast Radio Bursts: A Population Study and Case Study of FRB 20211105A", graduate school at UC Berkeley	2022

Graduate Research Supervision

Willis, Jacob, US Military sponsored Master's	2023 – present
Andrew, Shion	2022 – present
Wang, Haochen	2019 – present
Shin, Kaitlyn	2018 – present
Leung, Calvin, Hubble and Miller Fellowships at UC Berkeley	2018 – 2023

Postdoctoral Supervision

Lanman, Adam	2023 – present
Nimmo, Kenzie	2022 – present
Michilli, Daniele	2021 – present
Foreman, Simon, faculty at Arizona State University	2022
Chen, Tianyue, postdoc at École Polytechnique Fédérale de Lausanne	2019 – 2021
Mena-Parra, Juan, faculty at University of Toronto	2018 – 2022

Teaching

Physics II: Electricity and Magnetism, 8.02, Lecturer	springs of 2019, 2021, 2024
Physics I: Classical Mechanics, 8.01, Lecturer	falls of 2018, 2023
Graduate Cosmology, 8.942, Lecturer	falls of 2019, 2020, 2022
Physics III: Vibrations and Waves, 8.03, Recitation Instructor	fall 2021
Special Subject: Physics (Data Analysis and Computation), 8.S50, Contributing Lecturer	Jan. 2021

Academic Service

MIT Institute Service

MIT Kavli Institute Journal Club Committee, Chair	2021 – present
MIT Kavli Institute Faculty Postdoc Officer	2020 – present
Physics Graduate Admissions Committee, Astrophysics Chair	2023 – present
MIT Summer Research Program Physics Admissions Committee, Member	2022
Barrett Prize Committee, Chair	2022
Physics Graduate Admissions Committee, Member	2021 – 2022
Barrett Prize Committee, Member	2020
Astrophysics Colloquium, Organizer	2019 – 2021
Kavli Fellowship Selection Committee	2020
Physics PhD Written Qualifying Exam Committee	2020

Reports

Cosmology and Gravity Program Meeting Report, Canadian Institute for Advanced Research (four annual reports)	2014 – 2017

Meeting Organization

Science at Low Frequencies VI, Scientific Organizing Committee, Tempe	2019
GBT Intensity Mapping Analysis Workshop, Organizer, Toronto	2017
GBT Intensity Mapping Analysis Workshop, Organizer, Toronto	2012
21-cm Cosmology: Advanced Data Analysis Workshop, Organizer, Toronto	2011

Peer Review

Nature, Nature Astronomy, Physical Review Letters, Physical Review D, Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Astronomy and Computing

Publications

Papers arising from a supervised Ph.D. student indicated with * in date column
Lab members in bold

Refereed Articles

R. Abbott, T. D. Abbott, F. Acernese, K. Ackley, C. Adams, N. Adhikari, R. X. Adhikari, et al., "Search for Gravitational Waves Associated with Fast Radio Bursts Detected by CHIME/FRB during the LIGO-Virgo Observing Run O3a", Astrophys. J. 955, 155 (2023), arXiv:2203.12038. 2023

B. C. Andersen, E. Fonseca, J. W. McKee, B. W. Meyers, J. Luo, C. M. Tan, I. H. Stairs, et al., "CHIME Discovery of a Binary Pulsar with a Massive Nondegenerate Companion", Astrophys. J. 943, 57 (2023), arXiv:2209.06895. 2023

B. C. Andersen, C. Patel, C. Brar, P. J. Boyle, E. Fonseca, V. M. Kaspi, **K. W. Masui**, et al., "Flux Calibration of CHIME/FRB Intensity Data", AJ 166, 138 (2023), arXiv:2305.11302. 2023

CHIME Collaboration, M. Amiri, K. Bandura, **T. Chen**, M. Deng, M. Dobbs, M. Fandino, et al., "Detection of Cosmological 21 cm Emission with the Canadian Hydrogen Intensity Mapping Experiment", Astrophys. J. 947, 16 (2023), arXiv:2202.01242. 2023

CHIME/FRB Collaboration, B. C. Andersen, K. Bandura, M. Bhardwaj, P. J. Boyle, C. Brar, T. Cassanelli, et al., "CHIME/FRB Discovery of 25 Repeating Fast Radio Burst Sources", Astrophys. J. 947, 83 (2023), arXiv:2301.08762. 2023

A. M. Cook, M. Bhardwaj, B. M. Gaensler, P. Scholz, G. M. Eadie, A. S. Hill, V. M. Kaspi, et al., "An FRB Sent Me a DM: Constraining the Electron Column of the Milky Way Halo with Fast Radio Burst Dispersion Measures from CHIME/FRB", Astrophys. J. 946, 58 (2023), arXiv:2301.03502. 2023

R. Mckinven, B. M. Gaensler, **D. Michilli**, **K. Masui**, V. M. Kaspi, M. Bhardwaj, T. Cassanelli, et al., "A Large-scale Magneto-ionic Fluctuation in the Local Environment of Periodic Fast Radio Burst Source FRB 20180916B", Astrophys. J. 950, 12 (2023), arXiv:2205.09221. 2023

R. Mckinven, B. M. Gaensler, **D. Michilli**, **K. Masui**, V. M. Kaspi, J. Su, M. Bhardwaj, et al., "Revealing the Dynamic Magnetoionic Environments of Repeating Fast Radio Burst Sources through Multiyear Polarimetric Monitoring with CHIME/FRB", Astrophys. J. 951, 82 (2023), arXiv:2302.08386. 2023

M. Merryfield, S. P. Tendulkar, **K. Shin**, B. Andersen, A. Josephy, D. Good, F. A. Dong, et al., "An Injection System for the CHIME/FRB Experiment", AJ 165, 152 (2023), arXiv:2206.14079. 2023

D. Michilli, M. Bhardwaj, C. Brar, B. M. Gaensler, V. M. Kaspi, A. Kirichenko, **K. W. Masui**, et al., "Subarcminute Localization of 13 Repeating Fast Radio Bursts Detected by CHIME/FRB", Astrophys. J. 950, 134 (2023), arXiv:2212.11941. 2023

K. R. Sand, D. Breitman, **D. Michilli**, V. M. Kaspi, P. Chawla, E. Fonseca, R. Mckinven, et al., "A CHIME/FRB Study of Burst Rate and Morphological Evolution of the Periodically Repeating FRB 20180916B", Astrophys. J. 956, 23 (2023), arXiv:2307.05839. 2023

K. Shin, **K. W. Masui**, M. Bhardwaj, T. Cassanelli, P. Chawla, M. Dobbs, F. A. Dong, et al., "Inferring the Energy and Distance Distributions of Fast Radio Bursts Using the First CHIME/FRB Catalog", Astrophys. J. 944, 105 (2023), arXiv:2207.14316. * 2023

T. Cassanelli, **C. Leung**, M. Rahman, K. Vanderlinde, **J. Mena-Parra**, **S. Cary**, **K. W. Masui**, et al., "Localizing FRBs through VLBI with the Algonquin Radio Observatory 10 m Telescope", AJ 163, 65 (2022), arXiv:2107.05659. 2022

P. Chawla, V. M. Kaspi, S. M. Ransom, M. Bhardwaj, P. J. Boyle, D. Breitman, T. Cassanelli, et al., "Modeling Fast Radio Burst Dispersion and Scattering Properties in the First CHIME/FRB Catalog", Astrophys. J. 927, 35 (2022), arXiv:2107.10858. 2022

CHIME Collaboration, M. Amiri, K. Bandura, A. Boskovic, **T. Chen**, J.-F. Cliche, M. Deng, et al., "An Overview of CHIME, the Canadian Hydrogen Intensity Mapping Experiment", ApJS 261, 29 (2022), arXiv:2201.07869. 2022

CHIME Collaboration, M. Amiri, K. Bandura, A. Boskovic, J.-F. Cliche, M. Deng, M. Dobbs, et al., "Using the Sun to Measure the Primary Beam Response of the Canadian Hydrogen Intensity Mapping Experiment", Astrophys. J. 932, 100 (2022), arXiv:2201.11822. 2022

CHIME/FRB Collaboration, B. C. Andersen, K. Bandura, M. Bhardwaj, P. J. Boyle, C. Brar, D. Breitman, et al., "Sub-second periodicity in a fast radio burst", Nature 607, 256 (2022), arXiv:2107.08463. 2022

Z. Kader, **C. Leung**, M. Dobbs, **K. W. Masui**, **D. Michilli**, **J. Mena-Parra**, R. McKinven, et al., "High-time resolution search for compact objects using fast radio burst gravitational lens interferometry with CHIME/FRB", Phys. Rev. D 106, 043016 (2022), arXiv:2204.06014. * 2022

F. Kirsten, B. Marcote, K. Nimmo, J. W. T. Hessels, M. Bhardwaj, S. P. Tendulkar, A. Keimpema, et al., "A repeating fast radio burst source in a globular cluster", Nature 602, 585 (2022), arXiv:2105.11445. 2022

A. E. Lanman, B. C. Andersen, P. Chawla, A. Josephy, G. Noble, V. M. Kaspi, K. Bandura, et al., "A Sudden Period of High Activity from Repeating Fast Radio Burst 20201124A", Astrophys. J. 927, 59 (2022), arXiv:2109.09254. 2022

C. Leung, Z. Kader, **K. W. Masui**, M. Dobbs, **D. Michilli**, **J. Mena-Parra**, R. Mckinven, et al., "Constraining primordial black holes using fast radio burst gravitational-lens interferometry with CHIME/FRB", Phys. Rev. D 106, 043017 (2022), arXiv:2204.06001. * 2022

J. Mena-Parra, **C. Leung**, **S. Cary**, **K. W. Masui**, J. F. Kaczmarek, M. Amiri, K. Bandura, et al., "A Clock Stabilization System for CHIME/FRB Outriggers", AJ 163, 48 (2022), arXiv:2110.00576. * 2022

K. Nimmo, J. W. T. Hessels, F. Kirsten, A. Keimpema, J. M. Cordes, M. P. Snelders, D. M. Hewitt, et al., "Burst timescales and luminosities as links between young pulsars and fast radio bursts", Nature Astronomy, 10.1038/s41550-021-01569-9 (2022), arXiv:2105.11446. 2022

Y. Sun, K. Schutz, A. Nambrath, **C. Leung**, and **K. Masui**, "Axion dark matter-induced echo of supernova remnants", Phys. Rev. D 105, 063007 (2022), arXiv:2110.13920. 2022

H. Wang, **J. Mena-Parra**, **T. Chen**, and **K. Masui**, "Removing systematics-induced 21-cm foreground residuals by cross-correlating filtered data", Phys. Rev. D 106, 043534 (2022), arXiv:2203.07184. * 2022

L. Wolz, A. Pourtsidou, **K. W. Masui**, T.-C. Chang, J. E. Bautista, E.-M. Müller, S. Avila, et al., "HI constraints from the cross-correlation of eBOSS galaxies and Green Bank Telescope intensity maps", Mon. Not. R. Astron. Soc. 510, 3495 (2022), arXiv:2102.04946. 2022

M. Bhardwaj, B. M. Gaensler, V. M. Kaspi, T. L. Landecker, R. Mckinven, D. Michilli, Z. Pleunis, et al., "A Nearby Repeating Fast Radio Burst in the Direction of M81", Astrophys. J. Lett. 910, L18 (2021), arXiv:2103.01295. 2021

CHIME/FRB Collaboration, M. Amiri, B. C. Andersen, K. Bandura, S. Berger, M. Bhardwaj, M. M. Boyce, et al., "The First CHIME/FRB Fast Radio Burst Catalog", ApJS 257, 59 (2021), arXiv:2106.04352, **K. W. Masui** corresponding author. 2021

CHIME/Pulsar Collaboration, M. Amiri, K. M. Bandura, P. J. Boyle, C. Brar, J.-F. Cliche, K. Crowter, et al., "The CHIME Pulsar Project: System Overview", ApJS 255, 5 (2021), arXiv:2008.05681. 2021

D. C. Good, B. C. Andersen, P. Chawla, K. Crowter, F. Q. Dong, E. Fonseca, B. W. Meyers, et al., "First Discovery of New Pulsars and RRATs with CHIME/FRB", Astrophys. J. 922, 43 (2021), arXiv:2012.02320. 2021

A. Josephy, P. Chawla, A. P. Curtin, V. M. Kaspi, M. Bhardwaj, P. J. Boyle, C. Brar, et al., "No Evidence for Galactic Latitude Dependence of the Fast Radio Burst Sky Distribution", Astrophys. J. 923, 2 (2021), arXiv:2106.04353. 2021

C. Leung, **J. Mena-Parra**, **K. Masui**, K. Bandura, M. Bhardwaj, P. J. Boyle, C. Brar, et al., "A Synoptic VLBI Technique for Localizing Nonrepeating Fast Radio Bursts with CHIME/FRB", AJ 161, 81 (2021), arXiv:2008.11738. * 2021

R. Mckinven, D. Michilli, **K. Masui**, D. Cubranic, B. M. Gaensler, C. Ng, M. Bhardwaj, et al., "Polarization Pipeline for Fast Radio Bursts Detected by CHIME/FRB", Astrophys. J. 920, 138 (2021), arXiv:2107.03491. 2021

D. Michilli, **K. W. Masui**, R. Mckinven, D. Cubranic, M. Bruneault, C. Brar, C. Patel, et al., "An Analysis Pipeline for CHIME/FRB Full-array Baseband Data", Astrophys. J. 910, 147 (2021), arXiv:2010.06748. 2021

Z. Pleunis, D. Michilli, C. G. Bassa, J. W. T. Hessels, A. Naidu, B. C. Andersen, P. Chawla, et al., "LOFAR Detection of 110-188 MHz Emission and Frequency-dependent Activity from FRB 20180916B", Astrophys. J. Lett. 911, L3 (2021), arXiv:2012.08372. 2021

Z. Pleunis, D. C. Good, V. M. Kaspi, R. Mckinven, S. M. Ransom, P. Scholz, K. Bandura, et al., "Fast Radio Burst Morphology in the First CHIME/FRB Catalog", Astrophys. J. 923, 1 (2021), arXiv:2106.04356. 2021

M. Rafiei-Ravandi, K. M. Smith, D. Li, **K. W. Masui**, A. Josephy, M. Dobbs, D. Lang, et al., "CHIME/FRB Catalog 1 Results: Statistical Cross-correlations with Large-scale Structure", Astrophys. J. 922, 42 (2021), arXiv:2106.04354. 2021

S. P. Tendulkar, A. Gil de Paz, A. Y. Kirichenko, J. W. T. Hessels, M. Bhardwaj, F. Avila, C. Bassa, et al., "The 60 pc Environment of FRB 20180916B", Astrophys. J. Lett. 908, L12 (2021), arXiv:2011.03257. 2021

S. Zuo, J. Li, Y. Li, D. Santanu, A. Stebbins, **K. W. Masui**, R. Shaw, et al., "Data processing pipeline for Tianlai experiment", Astronomy and Computing 34, 100439 (2021), arXiv:2011.10757. 2021

P. Chawla, B. C. Andersen, M. Bhardwaj, E. Fonseca, A. Josephy, V. M. Kaspi, D. Michilli, et al., "Detection of Repeating FRB 180916.J0158+65 Down to Frequencies of 300 MHz", Astrophys. J. Lett. 896, L41 (2020), arXiv:2004.02862. 2020

CHIME/FRB Collaboration, M. Amiri, B. C. Andersen, K. M. Bandura, M. Bhardwaj, P. J. Boyle, C. Brar, et al., "Periodic activity from a fast radio burst source", Nature 582, 351 (2020), arXiv:2001.10275. 2020

CHIME/FRB Collaboration, B. C. Andersen, K. M. Bandura, M. Bhardwaj, A. Bij, M. M. Boyce, P. J. Boyle, et al., "A bright millisecond-duration radio burst from a Galactic magnetar", Nature 587, 54 (2020), arXiv:2005.10324. 2020

N. Denman, A. Renard, K. Vanderlinde, P. Berger, **K. Masui**, and I. Tretyakov, "A GPU Spatial Processing System for CHIME", Journal of Astronomical Instrumentation 9, 2050014 (2020), arXiv:2005.09481. 2020

E. Fonseca, B. C. Andersen, M. Bhardwaj, P. Chawla, D. C. Good, A. Josephy, V. M. Kaspi, et al., "Nine New Repeating Fast Radio Burst Sources from CHIME/FRB", Astrophys. J. Lett. 891, L6 (2020), arXiv:2001.03595. 2020

B. Marcote, K. Nimmo, J. W. T. Hessels, S. P. Tendulkar, C. G. Bassa, Z. Paragi, A. Keimpema, et al., "A repeating fast radio burst source localized to a nearby spiral galaxy", Nature 577, 190 (2020), arXiv:2001.02222. 2020

C. Ng, A. Pandhi, A. Naidu, E. Fonseca, V. M. Kaspi, **K. W. Masui**, R. Mckinven, et al., "Faraday rotation measures of Northern hemisphere pulsars using CHIME/Pulsar", Mon. Not. R. Astron. Soc. 496, 2836 (2020), arXiv:2006.06538. 2020

C. Ng, B. Wu, M. Ma, S. M. Ransom, A. Naidu, E. Fonseca, P. J. Boyle, et al., "The Discovery of Nulling and Mode-switching Pulsars with CHIME/Pulsar", Astrophys. J. 903, 81 (2020), arXiv:2009.07697. 2020

M. Rafiei-Ravandi, K. M. Smith, and **K. W. Masui**, "Characterizing fast radio bursts through statistical cross-correlations", Phys. Rev. D 102, 023528 (2020), arXiv:1912.09520. 2020

P. Scholz, A. Cook, M. Cruces, J. W. T. Hessels, V. M. Kaspi, W. A. Majid, A. Naidu, et al., "Simultaneous X-Ray and Radio Observations of the Repeating Fast Radio Burst FRB ~ 180916.J0158+65", Astrophys. J. 901, 165 (2020), arXiv:2004.06082. 2020

CHIME/FRB Collaboration, M. Amiri, K. Bandura, M. Bhardwaj, P. Boubel, M. M. Boyce, P. J. Boyle, et al., "A second source of repeating fast radio bursts", Nature 566, 235 (2019), arXiv:1901.04525. 2019

CHIME/FRB Collaboration, M. Amiri, K. Bandura, M. Bhardwaj, P. Boubel, M. M. Boyce, P. J. Boyle, et al., "Observations of fast radio bursts at frequencies down to 400 megahertz", Nature 566, 230 (2019), arXiv:1901.04524. 2019

CHIME/FRB Collaboration, B. C. Andersen, K. Bandura, M. Bhardwaj, P. Boubel, M. M. Boyce, P. J. Boyle, et al., "CHIME/FRB Discovery of Eight New Repeating Fast Radio Burst Sources", Astrophys. J. Lett. 885, L24 (2019), arXiv:1908.03507. 2019

A. Josephy, P. Chawla, E. Fonseca, C. Ng, C. Patel, Z. Pleunis, P. Scholz, et al., "CHIME/FRB Detection of the Original Repeating Fast Radio Burst Source FRB 121102", Astrophys. J. Lett. 882, L18 (2019), arXiv:1906.11305. 2019

K. W. Masui, J. R. Shaw, C. Ng, K. M. Smith, K. Vanderlinde, and A. Paradise, "Algorithms for FFT Beamforming Radio Interferometers", Astrophys. J. 879, 16 (2019). 2019

J. Taylor, N. Denman, K. Bandura, P. Berger, **K. Masui**, A. Renard, I. Tretyakov, et al., "Spectral kurtosis-based rfi mitigation for chime", Journal of Astronomical Instrumentation 8, 1940004 (2019), arXiv:1808.10365. 2019

C. J. Anderson, N. J. Luciw, Y.-C. Li, C. Y. Kuo, J. Yadav, **K. W. Masui**, T.-C. Chang, et al., "Low-amplitude clustering in low-redshift 21-cm intensity maps cross-correlated with 2dF galaxy densities", Mon. Not. R. Astron. Soc. 476, 3382 (2018), arXiv:1710.00424. 2018

CHIME/FRB Collaboration, M. Amiri, K. Bandura, P. Berger, M. Bhardwaj, M. M. Boyce, P. J. Boyle, et al., "The CHIME Fast Radio Burst Project: System Overview", Astrophys. J. 863, 48 (2018), arXiv:1803.11235. 2018

R. Hill, **K. W. Masui**, and D. Scott, "The Spectrum of the Universe", Applied Spectroscopy, 0003702818767133 (2018), arXiv:1802.03694. 2018

H.-H. Lin, **K. Masui**, U.-L. Pen, and J. B. Peterson, "Improved pulsar timing via principal component mode tracking", Mon. Not. R. Astron. Soc. 475, 1323 (2018), arXiv:1707.08581. 2018

M. Amiri, K. Bandura, P. Berger, J. R. Bond, J. F. Cliche, L. Connor, M. Deng, et al., "Limits on the Ultra-bright Fast Radio Burst Population from the CHIME Pathfinder", Astrophys. J. 844, 161 (2017), arXiv:1702.08040. 2017

K. W. Masui, U.-L. Pen, and N. Turok, "Two- and Three-Dimensional Probes of Parity in Primordial Gravity Waves", Phys. Rev. Lett. 118, 221301 (2017), arXiv:1702.06552. 2017

L. Wolz, C. Blake, F. B. Abdalla, C. J. Anderson, T.-C. Chang, Y.-C. Li, **K. W. Masui**, et al., "Erasing the Milky Way: new cleaning technique applied to GBT intensity mapping data", Mon. Not. R. Astron. Soc. 464, 4938 (2017), arXiv:1510.05453. 2017

L. Connor, H.-H. Lin, **K. Masui**, N. Oppermann, U.-L. Pen, J. B. Peterson, A. Roman, et al., "Constraints on the FRB rate at 700-900 MHz", Mon. Not. R. Astron. Soc. 460, 1054 (2016), arXiv:1602.07292. 2016

Y.-W. Liao, T.-C. Chang, C.-Y. Kuo, **K. W. Masui**, N. Oppermann, U.-L. Pen, and J. B. Peterson, "Accurate Polarization Calibration at 800 MHz with the Green Bank Telescope", Astrophys. J. 833, 289 (2016), arXiv:1610.04365. 2016

K. Masui, M. Amiri, L. Connor, M. Deng, M. Fandino, C. Höfer, M. Halpern, et al., "A compression scheme for radio data in high performance computing", Astronomy and Computing 12, 181 (2015), arXiv:1503.00638. 2015

K. Masui, H.-H. Lin, J. Sievers, C. J. Anderson, T.-C. Chang, X. Chen, A. Ganguly, et al., "Dense magnetized plasma associated with a fast radio burst", Nature 528, 523 (2015), arXiv:1512.00529. 2015

K. W. Masui and K. Sigurdson, "Dispersion Distance and the Matter Distribution of the Universe in Dispersion Space", Phys. Rev. Lett. 115, 121301 (2015), arXiv:1506.01704. 2015

E. R. Switzer, T.-C. Chang, **K. W. Masui**, U.-L. Pen, and T. C. Voytek, "Interpreting the Unresolved Intensity of Cosmologically Redshifted Line Radiation", Astrophys. J. 815, 51 (2015), arXiv:1504.07527. 2015

K. W. Masui, E. R. Switzer, N. Banavar, K. Bandura, C. Blake, L.-M. Calin, T.-C. Chang, et al., "Measurement of 21 cm Brightness Fluctuations at $z \sim 0.8$ in Cross-correlation", Astrophys. J. Lett. 763, L20 (2013), arXiv:1208.0331. 2013

E. R. Switzer, **K. W. Masui**, K. Bandura, L.-M. Calin, T.-C. Chang, X.-L. Chen, Y.-C. Li, et al., "Determination of $z \sim 0.8$ neutral hydrogen fluctuations using the 21 cm intensity mapping autocorrelation", Mon. Not. R. Astron. Soc. 434, L46 (2013), arXiv:1304.3712. 2013

K. W. Masui, P. McDonald, and U.-L. Pen, "Near-term measurements with 21 cm intensity mapping: Neutral hydrogen fraction and BAO at $z < 2$", Phys. Rev. D 81, 103527 (2010), arXiv:1001.4811. 2010

K. W. Masui and U.-L. Pen, "Primordial Gravity Wave Fossils and Their Use in Testing Inflation", Phys. Rev. Lett. 105, 161302 (2010), arXiv:1006.4181. 2010

K. W. Masui, F. Schmidt, U.-L. Pen, and P. McDonald, "Projected constraints on modified gravity cosmologies from 21 cm intensity mapping", Phys. Rev. D 81, 062001 (2010), arXiv:0911.3552. 2010

S. P. Pecknold, **K. W. Masui**, and P. C. Hines, "Transmission loss measurements and geoacoustic sensitivity modeling at 1.2 kHz", The Journal of the Acoustical Society of America 124, EL110 (2008). 2008

Submitted Articles

M. Bhardwaj, **D. Michilli**, A. Y. Kirichenko, O. Modilim, **K. Shin**, V. M. Kaspi, B. C. Andersen, et al., "Host Galaxies for Four Nearby CHIME/FRB Sources and the Local Universe FRB Host Galaxy Population", (2023), arXiv:2310.10018. 2023

T. Cassanelli, **C. Leung**, P. Sanghavi, **J. Mena-Parra**, **S. Cary**, R. Mckinven, M. Bhardwaj, et al., "A fast radio burst localized at detection to a galactic disk using very long baseline interferometry", (2023), arXiv:2307.09502. 2023

CHIME Collaboration, M. Amiri, K. Bandura, A. Chakraborty, M. Dobbs, M. Fandino, S. Foreman, et al., "A Detection of Cosmological 21 cm Emission from CHIME in Cross-correlation with eBOSS Measurements of the Lyman-α Forest", (2023), arXiv:2309.04404. 2023

E. Fonseca, Z. Pleunis, D. Breitman, K. R. Sand, B. Kharel, P. J. Boyle, C. Brar, et al., "Modeling the Morphology of Fast Radio Bursts and Radio Pulsars with fitburst", (2023), arXiv:2311.05829. 2023

U. Giri, B. C. Andersen, P. Chawla, A. P. Curtin, E. Fonseca, V. M. Kaspi, H.-H. Lin, et al., "Comprehensive Bayesian analysis of FRB-like bursts from SGR 1935+2154 observed by CHIME/FRB", (2023), arXiv:2310.16932. 2023

A. L. Ibik, M. R. Drout, B. M. Gaensler, P. Scholz, **D. Michilli**, M. Bhardwaj, V. M. Kaspi, et al., "Proposed host galaxies of repeating fast radio burst sources detected by CHIME/FRB", (2023), arXiv:2304.02638. 2023

H.-H. Lin, P. Scholz, C. Ng, U.-L. Pen, M. Bhardwaj, P. Chawla, A. P. Curtin, et al., "Do All Fast Radio Bursts Repeat? Constraints from CHIME/FRB Far Side-Lobe FRBs", (2023), arXiv:2307.05261. 2023

H.-H. Lin, P. Scholz, C. Ng, U.-L. Pen, D. Z. Li, L. Newburgh, A. Reda, et al., "Constraints on the Intergalactic and Local Dispersion Measure of Fast Radio Bursts with the CHIME/FRB far side-lobe events", (2023), arXiv:2307.05262. 2023

A. B. Pearlman, P. Scholz, S. Bethapudi, J. W. T. Hessels, V. M. Kaspi, F. Kirsten, **K. Nimmo**, et al., "Multiwavelength Constraints on the Origin of a Nearby Repeating Fast Radio Burst Source in a Globular Cluster", (2023), arXiv:2308.10930. 2023

M. Rafiei-Ravandi, K. M. Smith, **D. Michilli**, Z. Pleunis, M. Bhardwaj, M. Dobbs, G. M. Eadie, et al., "Statistical association between the candidate repeating FRB 20200320A and a galaxy group", (2023), arXiv:2308.09608. 2023

P. Sanghavi, **C. Leung**, K. Bandura, T. Cassanelli, J. Kaczmarek, V. M. Kaspi, K. Khairy, et al., "TONE: A CHIME/FRB Outrigger Pathfinder for localizations of Fast Radio Bursts using Very Long Baseline Interferometry", (2023), arXiv:2304.10534. * 2023

Y. Sun, K. Schutz, H. Sewalls, **C. Leung**, and **K. W. Masui**, "Looking in the axion mirror: An all-sky analysis of stimulated decay", (2023), arXiv:2310.03788. 2023

Conference Proceedings and Non-Refereed

K. Masui, "Pinpointing the origins of radio flashes", Nature Astronomy 7, 749 (2023). 2023

A. Reda, T. Pinsonneault-Marotte, M. Deng, M. Amiri, K. Bandura, A. Chakraborty, S. Foreman, et al., "Characterization of the John A. Galt Telescope for radio holography with CHIME", Millimeter, submillimeter, and far-infrared detectors and instrumentation for astronomy xi, Vol. 12190, edited by J. Zmuidzinas and J.-R. Gao, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series (Aug. 2022), p. 121902V, arXiv:2207.13876. 2022

S. Cary, **J. Mena-Parra**, **C. Leung**, **K. Masui**, J. F. Kaczmarek, T. Cassanelli, and CHIME/FRB Collaboration, "Evaluating and Enhancing Candidate Clocking Systems for CHIME/FRB VLBI Outriggers", Research Notes of the American Astronomical Society 5, 216 (2021), arXiv:2109.05044. 2021

E. Schoen, **C. Leung**, **K. Masui**, D. Michilli, P. Chawla, A. B. Pearlman, **K. Shin**, et al., "Scintillation Timescales of Bright FRBs Detected by CHIME/FRB", Research Notes of the American Astronomical Society 5, 271 (2021), arXiv:2111.08753. 2021

C. Ng, K. Vanderlinde, A. Paradise, P. Klages, **K. Masui**, K. Smith, K. Bandura, et al., "CHIME FRB: An application of FFT beamforming for a radio telescope", XXXIInd General Assembly & Scientific Symposium, International Union of the Radio Science (URSI) (Aug. 2017), arXiv:1702.04728. 2017

P. Berger, L. B. Newburgh, M. Amiri, K. Bandura, J.-F. Cliche, L. Connor, M. Deng, et al., "Holographic Beam Mapping of the CHIME Pathfinder Array", Ground-based and Airborne Telescopes VI, Vol. 9906, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series (Aug. 2016), arXiv:1607.01473. 2016

N. Denman, M. Amiri, K. Bandura, J.-F. Cliche, L. Connor, M. Dobbs, M. Fandino, et al., "A GPU-based Correlator X-engine Implemented on the CHIME Pathfinder", Application-specific Systems, Architectures and Processors, Institute of Electrical and Electronics Engineers (IEEE) International Conference Series (July 2015), arXiv:1503.06202. 2015

K. Bandura, G. E. Addison, M. Amiri, J. R. Bond, D. Campbell-Wilson, L. Connor, J.-F. Cliche, et al., "Canadian Hydrogen Intensity Mapping Experiment (CHIME) pathfinder", Ground-based and Airborne Telescopes V, Vol. 9145, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series (July 2014), arXiv:1406.2288. 2014

L. B. Newburgh, G. E. Addison, M. Amiri, K. Bandura, J. R. Bond, L. Connor, J.-F. Cliche, et al., "Calibrating CHIME: a new radio interferometer to probe dark energy", Ground-based and Airborne Telescopes V, Vol. 9145, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series (July 2014), arXiv:1406.2267. 2014

White Papers

K. Bandura, E. Castorina, L. Connor, S. Foreman, D. Green, D. Karagiannis, A. Liu, et al., "Packed Ultra-wideband Mapping Array (PUMA): A Radio Telescope for Cosmology and Transients", Astro2020 Decadal Survey: APC White Papers (2019), arXiv:1907.12559. 2019

Cosmic Visions 21 cm Collaboration, R. Ansari, E. J. Arena, K. Bandura, P. Bull, E. Castorina, T.-C. Chang, et al., "Inflation and Early Dark Energy with a Stage II Hydrogen Intensity Mapping experiment", Department of Energy Cosmic Visions Dark Energy Program (2018), arXiv:1810.09572. 2018

U.-L. Pen, J. R. Bond, M. Halpern, D. Hanna, Z. Huang, T. L. Landecker, **K. W. Masui**, et al., "21 cm Cosmology", Canadian Astronomical Society Long Range Plan 2010 (2010). 2010

Research Presentations

Seminars and Colloquia

"A Synoptic View of Fast Radio Bursts with CHIME", Physics Colloquium, McGill University, Montreal, 2023. 2023

"A Synoptic View of Fast Radio Bursts with CHIME", Cosmology and Gravitation Seminar, Perimeter Institute, Waterloo, 2023. 2023

"A Synoptic View of Fast Radio Bursts with CHIME", Seminar, Canadian Institute for Theoretical Astrophysics, Toronto, 2023. 2023

"A Synoptic View of Fast Radio Bursts with CHIME", Astrophysical Sciences Colloquium, Princeton University, Princeton, 2023. 2023

"A Synoptic View of Fast Radio Bursts with CHIME", Physics Colloquium, New York University, New York, 2022. 2022

"A Synoptic View of Fast Radio Bursts with CHIME", Cosmo Coffee Seminar, CERN, Geneva, 2022. 2022

"A Synoptic View of Fast Radio Bursts with CHIME", Astronomy Seminar, Queen Mary University, London, 2021. 2021

"A Synoptic View of Fast Radio Bursts with CHIME", Physics Colloquium, Simon Fraser University, Vancouver, 2021. 2021

"A Synoptic View of Fast Radio Bursts with CHIME", Joint Astrophysical Colloquium, Observatory of Bologna and Institute for Radioastronomy, Bologna, 2021. 2021

"A Synoptic View of Fast Radio Bursts with CHIME", Jodrell Bank Centre for Astrophysics Colloquium, University of Manchester, 2020. 2020

"Instrumenting the CHIME Pathfinder as a VLBI Outrigger", Tech Talk, Dominion Radio Astrophyical Observatory, Penticton, 2019.	2019
"Mapping the Universe with CHIME: a Digital Radio Telescope", Astronomy Colloquium, University of Massachusetts, Amherst, 2019.	2019
"Mapping the Universe with CHIME: a Digital Radio Telescope", Astrophysics Seminar, Brown University, Providence, 2019.	2019
"Primordial Gravity Waves from Tidal Imprints in Large-Scale Structure", Cosmology Seminar, Tufts University, Medford, 2019.	2019
"Mapping the Universe with Digital Radio Telescopes", Astrophysics Seminar, Massachusetts Institute of Technology, Cambridge, 2018.	2018
"Mapping the Universe with Digital Radio Telescopes", Physical Sciences Seminar, University of Washington Bothell, Seattle, 2018.	2018
"Fast Radio Bursts: a Mysterious New Class of Astronomical Object", Physics and Astronomy Colloquium, University of British Columbia, Vancouver, 2017.	2017
"Fast Radio Bursts: Mysterious Flashes from Cosmological Distances", Cosmology Seminar, Simon Fraser University, Burnaby, 2017.	2017
"Mapping the Large-Scale Structure of the Universe with Digital Radio Telescopes", Physical Sciences Colloquium, University of Washington Bothell, Seattle, 2017.	2017
"Mapping the Universe with Digital Radio Telescopes", Astronomy & Physics Seminar, Saint Mary's University, Halifax, 2017.	2017
"Primordial Gravity Waves from Tidal Imprints in Large-Scale Structure", Seminar, Perimeter Institute for Theoretical Physics, Waterloo, 2017.	2017
"Tidal Imprints in the Large-Scale Structure with 21 cm Surveys", Seminar, Canadian Institute for Theoretical Astrophysics, Toronto, 2017.	2017
"Understanding the Early Universe Using Scalable 21 cm Surveys", Astronomy Seminar, Carnegie Mellon University, Pittsburgh, 2017.	2017
"Fast Radio Bursts as Probes of Cosmic Structure", Seminar, Perimeter Institute for Theoretical Physics, Waterloo, 2016.	2016
"The Environment of a Fast Radio Burst Source and Outlook for CHIME–FRB", Astronomy Tea Talk, California Institute of Technology, Pasadena, 2016.	2016
"Fast Radio Bursts as Probes of Structure in 3D", Dark Universe Science Center Seminar, University of Washington, Seattle, 2015.	2015
"Large-Scale Structure with CHIME", Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, 2014.	2014
"21 cm Intensity Mapping—Large-Scale Structure with the Green Bank Telescope", Seminar, Australia Telescope National Facility Headquarters, Sydney, 2012.	2012
"21 cm Intensity Mapping—Large-Scale Structure with the Green Bank Telescope", Astrophysics Seminar, University of Melbourne, 2012.	2012
"Pioneering 21 cm Intensity Mapping at the Green Bank Telescope", Cosmology Seminar, University of California, Berkeley, 2012.	2012

Conferences, Invited

"A Synoptic View of Fast Transients with CHIME and Rubin", Steve Kahn Symposium, SLAC National Accelerator Laboratory, San Francisco, 2023.	2023
"Fast Radio burst VLBI Localization with CHIME/FRB Outriggers", TomFest: Frontiers in Radio Science and Engineering with Tom Landecker, Penticton, 2023.	2023
"FRB Searches and Applications to Cosmology and Galaxy Evolution", Scientific Frontiers and Synergies for the DSA-2000 Radio Camera, Pasadena, 2023.	2023
"From Mapping the Largest Structures to Catching the Shortest Flashes", Canadian Astronomical Society Annual General Meeting, Penticton, 2023.	2023
"Thousands of VLBI Localizations with CHIME/FRB Outriggers", Multi-wavelength follow-up of fast radio bursts in the era of routine (sub)arcsecond localizations, Toronto, 2023.	2023
"Cosmology with Upcoming Wide-Field High-Resolution Fast Radio Burst Surveys", Cosmological and Astrophysical Probes of New Physics, Princeton, 2022.	2022
"Solving Feedback with Electron Power Spectrum Measurements from FRBs", Plenty of Room at the Bottom—FRBs in Our Own Backyard, Ithaca, 2022.	2022
"A Synoptic View of Fast Radio Bursts with CHIME", Canadian Astronomical Society Annual General Meeting, virtual, 2021.	2021
American Astronomical Society High Energy Astrophysics Division Meeting, Tuscon, cancelled due to COVID19, 2020.	2020
"A Synoptic View of Fast Radio Bursts with CHIME", Canadian Institute for Advanced Research, Program in Gravity and the Extreme Universe Annual Meeting, virtual, 2020.	2020
"A Synoptic View of Fast Radio Bursts with CHIME", American Physical Society April Meeting, virtual, 2020.	2020
"Mapping the Sky with CHIME: a Digital Radio Telescope", Canadian Astronomical Society Annual General Meeting, Montreal, 2019.	2019
"How to Test Parity Symmetry in Primordial Gravity Waves", Canadian Institute for Advanced Research, Program in Cosmology and Gravity Annual Meeting, Lake Louise, 2017.	2017
"Large-Scale Structure of the Universe in the Age of Digital Telescopes", American Physical Society Northwest Section Annual Meeting, Forest Grove, 2017.	2017
"Dense Magnetized Plasma Associated with a Fast Radio Burst", Canadian Institute for Advanced Research, Program in Cosmology and Gravity Annual Meeting, Whistler, 2016.	2016
"Clustering of Fast Radio Bursts in Dispersion Measure Space", Canadian Institute for Advanced Research, Program in Cosmology and Gravity Annual Meeting, Banff, 2015.	2015
"CHIME: Calibration and Pipeline", Canadian Institute for Advanced Research, Program in Cosmology and GravityAnnual Meeting, Quebec City, 2014.	2014
"Studying Dark Energy by Mapping Neutral Hydrogen with CHIME: A John Galt Approach", A Workshop Celebrating the Career of John A. Galt, Penticton, 2014.	2014

Conferences, Contributed

"A Synoptic View of Fast Radio Bursts with CHIME", American Physical Society April Meeting, New York, 2022. 2022

"Localizing Fast Radio Bursts with Triggered Synoptic VLBI and CHIME/FRB Outriggers", URSI Atlantic Radio Science Conference, Gran Canaria, 2022. 2022

"The Canadian Hydrogen Intensity Mapping Experiment (CHIME)", URSI Atlantic Radio Science Conference, Gran Canaria, 2022. 2022

"The First CHIME/FRB Fast Radio Burst Catalog", American Astronomical Society Summer Meeting, virtual, 2021. 2021

"Thousands of VLBI Localizations with CHIME Outriggers", Fast Radio Burst 2020, virtual, 2020. 2020

"Deficit of Clustering in Hydrogen Intensity Maps Cross-Correlated with Galaxies", Canadian Astronomical Society Annual General Meeting, Victoria, 2018. 2018

"21 cm Intensity Mapping with the Green Bank Telescope", Canadian Astronomical Society Annual General Meeting, Vancouver, 2013. 2013

"21 cm Intensity mapping with the Green Bank Telescope: Interpretation and Prospects", Innovative Techniques in 21cm Analysis, Columbus, 2013. 2013

"Gravity Wave Fossils—Signatures of Tensor Modes in Pre-Reionization 21 cm Structure", CITA25/Bond60, Toronto, 2010. 2010

Panels

"Hidden Parameters Spaces Discussion", Fast Radio Burst 2023, virtual, 2023. 2023

"Cosmic Probes Discussion", The Dawn Of Cosmology & Multi-Messenger Studies With Fast Radio Bursts, virtual, 2022. 2022

"Radio Astronomy & Radio Science Education", NEROC: Northeast Radio Observatory Corporation Symposium, virtual, 2022. 2022

"Decadal Planning/Strategy Panel for Experiments", Panelist, Center for Computational Astrophysics Intensity Mapping Workshop, New York, 2019. 2019

Press Conferences

"A Catalog of 535 Fast Radio Bursts from CHIME/FRB", American Astronomical Society Summer Meeting Press Briefing, virtual, 2021. 2021

Research Contracts and Grants

For collaborative grants, all values are MIT portion

MIT School of Science's Research Innovation Seed Award, "The Distribution of the Universe's Gas with Dispersed Radio Bursts", $109k 2023 – 2024

MIT Research Support Committee, "Detecting the Universe's Largest Structures through Correlations of Radio Hydrogen Maps on Small Scales", $75k 2022 – 2024

NASA Hubble Space Telescope, "A repeating fast radio burst in a globular cluster at 3.6 Mpc", $10k 2021 – 2024

Moore Foundation, "CHIME Outriggers For Localization Of Fast Radio Bursts", $266k 2020 – 2024

NASA Hubble Space Telescope, "Constraining the local environment and possible binarity of the closest-known Fast Radio Burst Source", $19k 2020 – 2023

NSF Major Research Instrumentation Program, "Development of a CHIME Outrigger Telescope", $344k 2020 – 2023

NSF Astronomy and Astrophysics Research Grants, "Collaborative Research: Cosmology with CHIME", $400k 2020 – 2023

NASA Chandra X-ray Observatory, "Simultaneous Chandra, NuSTAR and Radio Observations of CHIME-discovered repeating FRBs", $23k 2020 – 2023

MIT NEC Corporation Fund for Research in Computers and Communication, "Radio Data Recorders for Precise Localization of a Hundred Fast Radio Burst", $75k 2019 – 2022

NASA Chandra X-ray Observatory, "Simultaneous X-ray and Radio Observations of the Second Localized Repeating Fast Radio Burst", $23k 2020 – 2021

Public Outreach

Public Lectures

"Hunting for Fast Radio Bursts with Digital Telescopes", Museum of Science, Boston, 2022. 2022

"Searching for Extragalactic Radio Flashes with Digital Telescopes", TRIUMF Saturday Morning Lecture, Simon Fraser University, Burnaby, 2017. 2017

"Fast Radio Bursts Probably aren't Powering Alien Space Ships", Cosmic Nights: Science of Science Fiction Lecture, H.R. MacMillan Space Centre, Vancouver, 2017. 2017

"Searching for Extragalactic Radio Flashes with Digital telescopes", TRIUMF Saturday Morning Lecture, TRIUMF, Vancouver, Sept. 2017. 2017

"Fast Radio Bursts—Flashes from Outside the Galaxy", Monthly Meeting, Royal Astronomical Society of Canada—Vancouver Centre, Vancouver, 2016. 2016

Articles

"Research Brief: A Repeating Fast Radio Burst", Canadian Institute for Advanced Research—Ideas Exchange, 2017. 2017

Other Contributions to the Educational Commons

MIT Commencement 2022, 2023

Advisory Committee, MIT PhD in Physics, Statistics, and Data Science 2020 – present

MIT Physics Exploration Lecture Series, Independent Activities Period 2020

Thesis and PhD Examination Committees

Chen, Zhaoting, University of Manchester, supervisor: Laura Wolz 2023

Levitan, Abe, MIT Physics, supervisor: Riccardo Comin 2023

Kononov, Kat, MIT Aeronautics and Astronautics, supervisor: Kerri Cahoy 2022 – present

Qin, Wenzer, MIT Physics, supervisor: Tracy Slatyer 2022 – present

Jepsen, Paul Niklas, MIT Physics, supervisor: Wolfgang Ketterle 2021