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Dr. Chi-kwan Chan (CK) is an Associate Astronomer/Research Professor at Steward Observatory and the Department of Astronomy, University of Arizona, and has been serving as the Secretary of the Event Horizon Telescope (EHT) Science Council since 2020. He recently led the publication of the computational and theoretical modeling/interpretation of our black hole, Sgr A*. Dr. Chan created EHT's computational and data processing infrastructure and continues to manage it to this day, along with leading EHT's Software and Data Compatibility Working Group. He was a Senior Investigator, now Principal Investigator, of Black Hole PIRE, a leader of the Theoretical Astrophysics Program (TAP), a Data Science Fellow, and a faculty member of the Applied Mathematics Program. In addition to pioneering the use of Graphics Processing Units (GPUs) to accelerate the modeling of black holes, Dr. Chan also developed many new algorithms to improve and accelerate modern research, built cloud computing infrastructures for large observational data, and applied machine learning algorithms to speed up and automate data processing. Dr. Chan has taught and mentored in subjects of machine learning, numerical analysis, cloud computing, and quantum computing, and is an avid hiker.

Research Interests

Black hole astrophysics, computational astrophysics, parallel and scalable algorithms, HPC-cloud convergence, VLBI, machine learning, data visualization, VR, interactive simulations.

Employment

2021 –	Associate Research Professor, Steward Observatory
2018 –	Data Science Fellow, University of Arizona
2018 – 2020	Assistant Astronomer, Steward Observatory
2017	Visiting Scientist, Harvard Black Hole Initiative
2013 – 2017	Research Associate, Steward Observatory
2010 – 2012	NORDITA Fellow, Nordic Institute for Theoretical Physics
2010	Teaching Fellow, Harvard University
2007 – 2010	ITC Fellow, Harvard-Smithsonian Center for Astrophysics
2005 – 2007	Summer Intern in Theory Division, Los Alamos National Laboratory

Leadership and Professional Services

2021 –	*Leader*, Computation and Data Initiative, TAP
2021 –	*Committee Member*, Research Computing Governance, University of Arizona
2020 –	*Referee*, EHT publications (internal)
2018 –	*Leader*, Software and Data Compatibility Working Group, EHT Collaboration
2009 –	*Referee*, astrophysics journals including ApJ, ApJL, MNRAS, PASJ, and A&A

2022	*Reviewer*, RII Research Development Grants, University of Arizona
2022	*Committee Member*, Undergraduate Research Task Force, University of Arizona
2021 – 2022	*Committee Member*, Rebuilding IT, Steward Observatory
2021 – 2022	*Leader*, Sgr A* Theory Paper, EHT Collaboration
2021 – 2022	*Reviewer*, DOE INCITE Astrophysics Review Panel, DOE
2020 – 2022	*Secretary*, Science Council, EHT Collaboration
2021	*Reviewer*, NASA Open Source Tools, Frameworks, and Libraries 2020 Review Panel, NASA
2020 – 2021	*Committee Member*, Theory Prize, Steward Observatory
2018	*Committee Member*, Data Visualization, University of Arizona
2008 – 2009	*Member*, Postdoc Council, Harvard-Smithsonian Center for Astrophysics

Education

May 2007	Ph.D. in Physics, University of Arizona
May 2002	B.S. in Physics and Mathematics (Cum Laude), University of Arizona

Grants and Allocations

2022 –	*PI*, "PIRE: Black Hole Astrophysics in the Era of Distributed Resources and Expertise", NSF #1743747, US$5,678,833
2022 –	*PI*, "The Ultra Violet Output of Sgr A*", JWST Cycle 1 GO-02075, US$156,459
2020 –	*PI*, "Event Horizon Telescope Allocation" and "Steward Observatory Allocation" OSG OSPool allocation for the EHT and Steward Observatory, 20M core-hr to date, US$380,000 equiv. to date
2020 – 2022	*PI*, "The Frontera-Event Horizon Telescope Partnership", TACC Frontera Large-Scale Community Partnerships AST20023, 1.2M SUs=68M core-hr, US$1,300,000 equiv. (one of the largest awarded at the time)
2020 –	*Co-I*, "Advanced Debris Disk Modeling for the Next Decade", NASA 18-2XRP18_2-0063, US$328,565
2023	*Co-I*, "Black Hole Dynamics and Achromaticity in the Shadow of Sgr A*", ALMA
2023	*Co-I*, "A sample of SMBH shadows, rings, accretion flows and jet bases: exploratory EHT+ALMA flux measurements", ALMA 2022.1.01055.V
2023	*Co-I*, "NGC4261: the 2nd jet at < 50 gravitational radii (and the 3rd black hole shadow?)", ALMA 2022.1.00520.V
2023	*Co-I*, "A sample of SMBHs at <100 Rg scales: accretion flows, jets, shadows: GMVA+ALMA imaging", ALMA 2022.1.00366.V
2023	*Co-I*, "Kinematics of Jets in low luminosity AGNs", VLBA 22B-227, 40 hrs
2023	*Co-I*, "Constraining the accretion and jet properties of next generation EHT targets", NuSTAR 8229, 200 ksec
2023	*Co-I*, "X-ray reverberation in billion mass black holes", NICER 5176, 360 ksec

2023 *Co-I*, "Constraining the micro-variability time-scales to photon orbits in low luminosity AGNs", SMARTS-1m, 125 hrs

2023 *Co-I*, "EHT Sample: Jet profile of nearby AGNs", LBA V587, 70 hrs

2023 *Co-I*, "Pilot study to constrain the compactness of low luminosity AGN", ATCA C3404, 50 hrs

2023 *Co-I*, "A sample of black holes at ¡100 Rg scales: accretion flows, jets, shadows" GMVA 20B-343

2022 *Co-I*, "TESS Monitoring Of Low Luminosity AGNs", TESS G04232

2022 *Co-I*, "Towards a sample of SMBH shadows, rings, accretion flows and jet bases: exploratory EHT+ALMA flux measurements", ALMA Cycle 8 2021.1.01156.V

2022 *Co-I*, "Connecting the black hole shadow and jet base in M 87", ALMA Cycle 8 2021.1.00910.V

2022 *Co-I*, "Capturing Real-Time Black Hole Dynamics in Sgr A*", ALMA Cycle 8 2021.1.00906.V

2018 *Co-I*, "Imaging the Global Accretion and Outflow of Sgr A*: 3mm VLBI with GMVA+ALMA", ALMA Cycle 5 2017.1.00795.V

Highlighted Publications

- "First Sagittarius A* Event Horizon Telescope Results. V. Testing Astrophysical Models of the Galactic Center Black Hole" Event Horizon Telescope Collaboration ... **Chan, C.-k.**; et al. 2022 ApJL, 930, 16 (paper lead)
- "Event Horizon Telescope observations of the jet launching and collimation in Centaurus A" Janssen, M. ... **Chan, C.-k.**; et al. 2021 Nature Astronomy, 5, 1017 (principal author)
- "First M87 Event Horizon Telescope Results. III. Data Processing and Calibration" Event Horizon Telescope Collaboration ... **Chan, C.-k.**; et al. 2019 ApJL, 875, 3 (principal author; cited: 421)
- "EHT-HOPS pipeline for millimeter VLBI data reduction" Blackburn, L.; **Chan, C.-k.**; et al. 2019 ApJ, 882, 23 (principal author; cited: 31)
- "A General Relativistic Null Hypothesis Test with Event Horizon Telescope Observations of the Black Hole Shadow in Sgr A*" Psaltis, D.; Özel, F.; **Chan, C.-k.**; et al. 2015 ApJ, 814, 115 (principal author; cited: 112)
- "Fast Variability and mm/IR flares in GRMHD Models of Sgr A* from Strong-Field Gravitational Lensing" **Chan, C.-k.**; Psaltis, D.; Özel, F.; Medeiros, L.; Marrone, D.P.; Saḍowski, A.; & Narayan, R. 2015 ApJ, 812, 103 (first author; cited: 64)
- "The Power of Imaging: Constraining the Plasma Properties of GRMHD Simulations using EHT Observations of Sgr A*" **Chan, C.-k.**; Psaltis, D.; Özel, F.; Narayan, R.; & Saḍowski, A. 2015 ApJ, 799, 1 (first author; cited: 113)
- "GRay: A Massively Parallel GPU-based Code for Ray Tracing in Relativistic Spacetimes" **Chan, C.-k.**; Psaltis, D.; & Özel, F. 2013 ApJ, 777, 13 (first author; cited: 82)

Highlighted Presentations and Conferences

- *Speaker*, "Resolving the Galactic Center Black Hole with the Event Horizon Telescope", Astronomy Seminar, UBC, Oct 2022
- *Keynote speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy: A Computation Perspective", IUPAP Conference on Computational Physics, Hong Kong, Jul 2019
- *Keynote speaker*, "In the Shadow of the Black Hole", GitHub Satellite, Berlin, May 2019
- *Keynote speaker*, "Bringing Black Holes into Focus: The Event Horizon Telescope's First Image", Tucson, Apr 2019
- *Invited speaker*, "First Sagittarius A* Event Horizon Telescope Results: Testing Astrophysical Models of the Galactic Center Black Hole", AAS Meeting, Pasadena, June 2022
- *Invited speaker*, "Sagittarius A*: the Supermassive Black Hole at our Galactic Centre", Hong Kong Space Museum, May 2022 (Cantonese)
- *Invited speaker*, "Capturing Black Holes in the Era of Distributed Resources and Expertise", Zoomtopia, San Jose, Oct 2019
- *Speaker*, "Recent Progress in General Relativistic Ray Tracing", Black Hole Initiative, Cambridge, Sep 2017

Professional Honors

2021	EHT Early Career Award
2021	Royal Astronomical Society Group Award
2020	Breakthrough Prize in Fundamental Physics
2020	Nelson P. Jackson Aerospace Award
2020	Bruno Rossi Prize
2020	Einstein Medal
2019	American Ingenuity Award in Physical Sciences
2019	NSF Diamond Achievement Award
2010 – 2012	NORDITA Fellowship
2007 – 2010	Harvard ITC Fellowship

Teachings

2021 –	*Instructor*, ASTR/PHYS 105A "Introduction to Scientific Computing", Astronomy and Physics Departments, University of Arizona
2019	*Instructor*, "Container Camp", CyVerse, University of Arizona
2019	*Organizer and instructor*, "PIRE Cloud Computing Busyweek", Black Hole PIRE, University of Arizona
2018	*Organizer and instructor*, "Learning Docker and Singularity", CyVerse AstroContainers Workshop, University of Arizona

2018 *Organizer and instructor*, "Black Hole PIRE Winter School on High-Performance Computing and Coordinating Global Observations", Black Hole PIRE, University of Arizona

2010 *Guest lecturer*, numerical analysis class on topics of GPU computation, KTH, Stockholm

Mentorships

2018 – "Numerical Methods for Simulating Plasma Around Black Holes", *Tyler Trent*, feature extraction algorithm development for EHT and numerical integrators in curved spacetime

2021 – "General Relativistic Ray Tracing in Dynamic Spacetime", *Gabriele Bozzola*, simulate images of merging black holes

2015 – 2020 "Plasma Physics and General Relativistic Radiative Transfer", *David Ball*, electron number distributions and their effect in black hole images

2015 – 2019 "Time Variability and Interferometric Images in GRMHD Simulations", *Lia Medeiros*, general relativistic radiative transfer and VLBI research

2022 – "Particle Orbits around Kerr Naked Singularity", *Elyas Loutfi Farah*, using `fadge` to solve time-like geodesics around naked singularity

2021 – "Observation Signature of Kerr Naked Singularity", *Bao Nguyen*, using `fadge` to solve null geodesics around naked singularity

2021 – "General Relativistic Ray Tracing", *Aniket Sharma*, using Google `JAX` for general relativistic ray tracing

2021 – "Signature of Magnetorotational Instability in GRMHD Simulations", *Tin-Lok Chan*, HPC and GRMHD simulations using `Athena++` and `BHAC`, and contributions for EHT Sgr A* Papers I and V

2021 – "Application of Machine Learning in Astrophysics", *Anthony Hsu*, machine learning methods and developing topological data analysis software

2020 – "Weather Nowcasting at EHT Telescope Sites", *Phani Datta Velicheti*, developing software package μcast, provided references for summer internships at National Radio Astronomy Observatory (2021) and Space Telescope Science Institute (2022)

2021 "Honor Project to Develop EHT Outreach Materials", *Rachel Wells*, developing education materials for elementary school students

2020 "Data Process and Security with Kubernetes", *Jarod Bristol*, *Ethan Glasberg*, & *Ryan Luu*, improving security for EHT's cloud computing infrastructure

2020 "PCA-based Clustering Algorithm for EHT Imaging Results", *Yuan Jea Hew*, developing and contributing algorithms to EHT's imaging work

2020 "Create virtual reality app to visualize black hole simulations", *Jose Perez*, *Jimena Stephenson*, *Hafizudin Hashim*, & *JianDa Zhau*, developing VR app for education

2019 "Developing Augmented Reality App for Stellar Evolution", *Muaz Burhanudin*, developing VR app for education

2019 "Time Variability of Closure Phase", *Ryan Gatski*, developing model-free algorithm

	to calibration polarimetry visibility data
2019	"Improving General Relativistic Ray Tracing", *Will Price* & *Devin Shawn Cameron*, developing algorithm to visualize black hole simulations
2019	"Developing Augmented Reality App for the Event Horizon Telescope", *Jose Perez*, *Elizabeth Champagne*, & *Yuan Jea Hew*, developing VR app for education
2018	"Cloud Computing for Astronomy", *Alexis Tinoco Cazarez*, learning and using Docker technology
2011 – 2012	"Growth of Massive Black Holes by Super-Eddington Accretion" *Phillip Jenks*, algorithm development in radiation hydrodynamics
2005 – 2006	"Numerical Method of Radiactive Diffusion" *Robert Marcus*, algorithm development for senior thesis

Media and Public Engagements

2019 – 2022	*Interviewee*, national and international TV channels and newspapers (various)
2022	*Interviewee*, NSF Press Release of the first Sgr A* results
2022	*Invited Speaker*, Tucson Amateur Astronomers Club
2022	*Outreach Member*, South by Southwest™
2019	*Organizer and Host*, University High School's Penguin AI Club visit
2019	*Outreach Speaker*, Korean Visiting Students, University of Arizona
2019	*Organizer and Host*, Study tour in collaboration with Chinese University of Hong Kong
2019	*Organizer and Artist*, "Einstein Chalk Art", University of Arizona
2019	*Interviewee*, NSF Press Release of the first M87 results
2018	*Outreach Member*, UArizona Home Coming
2015	*Co-founder and advisor*, `AstroCardboard`
2015	*Developer and advisor*, `RosettaTour` app

Selected Presentations and Conferences

49. *SOC (Chair)*, 2022 EHT Winter Collaboration Meeting, Virtual, Dec 2022
48. *Speaker*, "Sparking Imaginations with Black Hole Images", 4th Shaw-IAU workshop, Nov 2022
47. *Speaker*, "Resolving the Galactic Center Black Hole with the Event Horizon Telescope", Cosmology Seminar, SFU, Oct 2022
46. *Speaker*, "Resolving the Galactic Center Black Hole with the Event Horizon Telescope", Astronomy Seminar, UW, Oct 2022
45. *Speaker*, "Resolving the Galactic Center Black Hole with the Event Horizon Telescope", Astrophysics Colloquium, UBC, Oct 2022
44. *Speaker*, "Performing Large Scale Parameter Surveys with OSG Services", Black Hole PIRE Webinar, Sep 2022

43. *Speaker*, "Resolving the Galactic Center Black Hole with the Event Horizon Telescope", Steward Observatory/NSF's NOIRLab Joint Colloquium, Tucson, Sep 2022
42. *Invited speaker*, "First Sagittarius A* Event Horizon Telescope Results: Testing Astrophysical Models of the Galactic Center Black Hole", AAS Meeting, Pasadena, June 2022
41. *Invited speaker*, "Sagittarius A*: the Supermassive Black Hole at our Galactic Centre", Hong Kong Space Museum, May 2022 (Cantonese)
40. *Invited speaker*, "Resolving Black Holes with the Event Horizon Telescope", Tucson Amateur Astronomers Club, April 2022
39. *Organizer*, "A Deep Look Into the Black Hole in the Center of the Milky Way", Black Hole PIRE Webinar Series, Spring 2022
38. *Organizer*, two EHT Theory busyweeks, 2021
37. *Organizer*, "Advanced EHT Data Analysis", Black Hole PIRE Webinar Series, Spring 2021
36. *Organizer*, EHT 2021 Winter Collaboration Meeting, Tucson, Nov 2021
35. *Organizer*, EHT 2020 Winter Collaboration Meeting, Dec 2020
34. *Speaker*, "Astrophysics Empowered by the EHT: Ray Tracing", Black Hole PIRE Webinar Series Session 3, Oct 2020
33. *Organizer*, "Astrophysics Empowered by the EHT", Black Hole PIRE Webinar Series, Fall 2020
32. *Organizer*, "VLBI Data Series", Black Hole PIRE Webinar Series, Spring 2020
31. *Public speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy", Public talk to visiting highschool students, Tucson, Dec 2019
30. *Public speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy", Public talk to visiting students from Korea, Tucson, Nov 2019
29. *Speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy: A Data Analysis Perspective", UA-TRIPODS Seminar, Tucson, Oct 2019
28. *Invited speaker*, "Capturing Black Holes in the Era of Distributed Resources and Expertise", Zoomtopia, San Jose, Oct 2019
27. *Organizer*, "Cloud Computing", Black Hole PIRE Webinar Series, Fall 2019
26. *Keynote speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy: A Computation Perspective", IUPAP Conference on Computational Physics, Hong Kong, Jul 2019
25. *Public speaker*, "Imaging the Supermassive Black Hole at the Center of the M87 Galaxy", Public talk to visiting students from Hong Kong, Tucson, Jul 2019
24. *Keynote speaker*, "In the Shadow of the Black Hole", GitHub Satellite, Berlin, May 2019
23. *Keynote speaker*, "Bringing Black Holes into Focus: The Event Horizon Telescope's First Image", Tucson, Apr 2019
22. *Organizer and Lecturer*, "Black Hole PIRE Winter School on High-Performance Computing and Coordinating Global Observations", Tucson, Dec 2018
21. *Invited speaker*, "Imaging Event Horizons—A Journey Walked Together by Observers and Theorists", Shanghai Astronomical Observatory, Sep 2018
20. *Organizer*, "Docker and Jupyter for Reproducible Astronomy", PIRE Mini-Hackathon, Tucson, Apr 2018

19. *Keynote speaker*, "GPU Computing: from PC & HPC to the Cloud & the Edge", Black Hole PIRE Launch, Tucson, Feb 2018
18. *Speaker*, "Recent Progress in General Relativistic Ray Tracing", Black Hole Initiative, Cambridge, Sep 2017
17. *Organizer*, "Multi-Scale Plasma Flows Around Black Holes", TCAN Collaboration Meeting, Tucson, Oct 2016
16. *Speaker*, "`GRay2`: Improving General Relativistic Ray Tracing and Beyond", TCAN Collaboration Meeting, Tucson, Oct 2016
15. *Speaker*, "Fast Variabilites in GRMHD Models of Sgr A* and Their Implications for EHT Observations", International Astronomical Union Symposium 322, Australia, Jul 2016
14. *Speaker*, "On MHD Turbulence and Angular Momentum Transport in Accretion Disk Boundary Layers", International Astronomical Union Symposium 294, Beijing, Aug 2012
13. *Organizer*, "Astrophysics Code Comparison Workshop", NORDITA, Stockholm, Aug 2012
12. *Speaker*, "Condensates in Two Dimensional Turbulence", FrischFest: the Solar Course, the Chemic Force, and the Speeding Change of Water, Stockholm, Oct 2011
11. *Speaker*, "The Pseudospectral Method: Recent Advances and Prospects, Part II", The Nature of Turbulence Workshop at KITP, Santa Barbara, Mar 2011
10. *Speaker*, "Local Anisotropy in MHD Turbulence", RädlerFest: α Effect and Beyond, Stockholm, Feb 2011
9. *Speaker*, "High Order Numerical Methods on GPUs", Computational Physics with GPUs Conference, Lund, Nov 2010
8. *Speaker*, "Lessons from Radiative and MHD Simulations for Supermassive Black Hole Growth", Aspen Winter Conference on Formation and Evolution of Black Holes, Aspen, Feb 2010
7. *Speaker*, "What do Spectra Mean in MHD Turbulence?", Institute for Advanced Study Thursday Seminar, Princeton, May 2009
6. *Organizer*, "Plasma Astrophysics Meetings", Institute for Theory and Computation, Cambridge, 2009
5. *Speaker*, "Generalized Shearing Boxes for Multi-Scale Studies of MHD Turbulence", Saturation and Transport Properties of MRI-driven Turbulence Conference at IAS, Princeton, Jun 2008
4. *Organizer*, "Saturation and Transport Prop- erties of MRI-driven Turbulence", IAS, Princeton, Jun 2008
3. *Speaker*, "Turbulence Generation in Magnetized Accretion Disks", Harvard-Smithsonian Center for Astrophysics PEOPLE Lecture, Cambridge, Dec 2007
2. *Organizer*, "Astrophysical Turbulence Meetings", Institute for Theory and Computation, Cambridge, 2007 – 2008
1. *Speaker*, "Toward Realistic Accretion Disk Simulations", Los Alamos National Laboratory Theory Seminar, Los Alamos, Jul 2007

Selected Software

Sole Developer:

- `lux`, high performance scientific computation framework that can measure the run time

performance of algorithms and optimize it on-the-fly: `http://github.com/luxsrc/lux`

- `gray`, massive parallel ODE integrator for performing general relativistic radiative transfer using ray tracing: `http://github.com/luxsrc/gray`
- `XAJ`, ordinary differential equation (ODE) integrator compatible with Google's GPU-accelerated autodiff package `JAX`: `http://github.com/adxsrc/xaj`
- μ`cast`, weather forecast data processing package with micro-weather forecasting for radio astronomy: `https://github.com/focisrc/ucast`, `https://focisrc.github.io/ucast-db/`
- `insight`, open of the first interactive data visualization tools in virtual reality: `http://github.com/luxsrc/insight`, `https://youtu.be/tfDO88R1jTw`
- `orbits`, collection of symplectic integrators that are ideal for solving celestial mechanic problems: `http://github.com/rndsrc/orbits`
- `sg2`, 2D spectral Galerkin code written in CUDA C and runs on nVidia GPUs: `http://github.com/rndsrc/sg2`, `https://youtu.be/4ORDgzIwK00`
- EHT's docker stack, Dockerfiles to set up EHT's data analysis containers for reproducibility: `https://github.com/eventhorizontelescope/docker-recipes`
- OSG tools for `igrmonty` and `ipole`, for running large GRRT and GR Monte Carlo simulations: `https://github.com/bhpire/igrmonty-osg`, `https://github.com/bhpire/ipole-osg`

Lead Developer:

- EHT 2017 HOPS pipeline, *lead developer*, the HOPS pipeline used to process EHT's 2017 observation data: `https://github.com/eventhorizontelescope/2017-april`
- Sgr A* theory paper data analysis tools, *lead developer*, Jupyter notebooks for managing and analyzing large number of GRRT images and GR Monte Carlo SEDs of black holes, used for EHT Sgr A* paper V: `https://github.com/eventhorizontelescope/2017_sgra_paper5`
- `ehtplot`, *lead developer*, plotting utility including the perceptually uniform `afmhot_10us` colormap, `https://github.com/AFD-Illinois/igrmonty`

Key Contributor:

- OSG SYMBA pipeline with Pegasus, for running very large scale synthetic data generation jobs for VLBI: `https://github.com/bhpire/symba-osg`
- OSG tools for measure image sizes, for estimating second moments in visibility domain of very large number of images: `https://github.com/bhpire/calsz-osg`
- `igrmonty`, well tested GR Monte Carlo code for computing SEDs of black holes, `https://github.com/AFD-Illinois/igrmonty`
- `eht-imaging`, one of EHT's main image reconstruction and data processing packages, `https://github.com/achael/eht-imaging`

Links to additional projects: (1) `http://github.com/rndsrc`, (2) `https://github.com/luxsrc`, (3) `https://github.com/adxsrc`, and (4) `https://github.com/focisrc`; visualizations and demos: `https://www.youtube.com/c/ChikwanChan/videos`.

White Papers

4. "The Growing Importance of a Tech Savvy Astronomy and Astrophysics Workforce" Norman, D ... **Chan, C.-k..**; et al. 2019 arXiv:1910.08376
3. "Sustaining Community-Driven Software for Astronomy in the 2020s" Tollerud, E ... **Chan, C.-k..**; et al. 2019 BAAS 51 (7), 180
2. "Training the Future Generation of Computational Researchers" Besla, G ... **Chan, C.-k..**; et al. 2019 Bulletin of the American Astronomical Society 51 (7) and arXiv:1907.04460
1. "Astro2020 APC White Paper: Elevating the Role of Software as a Product of the Research Enterprise" Smith, A.M. ... **Chan, C.-k..**; et al. 2019 arXiv:1907.06981

Selected Publications

73. "Resolving the Inner Parsec of the Blazar J1924-2914 with the Event Horizon Telescope" Issaoun, S. ... **Chan, C.-k..**; et al. 2022 ApJ, 934, 145
72. "Topological Data Analysis of Black Hole Images" Christian, P.; **Chan, C.-k.**; et al. 2022 PhRvD, 106, 023017
71. "Characterizing and Mitigating Intraday Variability: Reconstructing Source Structure in Accreting Black Holes with mm-VLBI" Broderick, A.E. ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 18
70. "A Universal Power-law Prescription for Variability from Synthetic Images of Black Hole Accretion Flows" Boris, G. ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 18
69. "Millimeter Light Curves of Sagittarius A* Observed during the 2017 Event Horizon Telescope Campaign" Wielgus, M. ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 18
68. "Selective Dynamical Imaging of Interferometric Data" Farah, J. ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 18
67. "First Sagittarius A* Event Horizon Telescope Results. VI. Testing the Black Hole Metric" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 17
66. "First Sagittarius A* Event Horizon Telescope Results. V. Testing Astrophysical Models of the Galactic Center Black Hole" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 16
65. "First Sagittarius A* Event Horizon Telescope Results. IV. Variability, Morphology, and Black Hole Mass" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 15
64. "First Sagittarius A* Event Horizon Telescope Results. III. Imaging of the Galactic Center Supermassive Black Hole" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 14
63. "First Sagittarius A* Event Horizon Telescope Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 13
62. "First Sagittarius A* Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way" EHT Collaboration ... **Chan, C.-k..**; et al. 2022 ApJL, 930, 12
61. "PATOKA: Simulating Electromagnetic Observables of Black Hole Accretion" Wong, G.N. ... **Chan, C.-k..**; et al. 2022 ApJS, 259, 64

60. "Black Hole Physics and Computer Graphics" Bozzola, G.; **Chan, C.-k.**; Paschalidis, V. 2022 Computing in Science and Engineering, 24, 19
59. "Markov Chains for Horizons MARCH. I. Identifying Biases in Fitting Theoretical Models to Event Horizon Telescope Observations" Psaltis, D. ... **Chan, C.-k..**; et al. 2022 ApJ, 928, 55
58. "The Variability of the Black Hole Image in M87 at the Dynamical Timescale" Satapathy, K. ... **Chan, C.-k..**; et al. 2022 ApJ, 925, 13
57. "Brightness Asymmetry of Black Hole Images as a Probe of Observer Inclination" Medeiros, L.; **Chan, C.-k.**; et al. 2022 ApJ, 924, 46
56. "Accretion properties of low-luminosity active galactic nuclei" Ramakrishnan, V.; **Chan, C.-k..**; & Nagar, Neil 2021, Astron. Nachr., 342:1180–1184
55. "A Plasmoid model for the Sgr A* Flares Observed With Gravity and CHANDRA" Ball, D. ... **Chan, C.-k..**; et al. 2021 ApJ, 917, 8
54. "Event Horizon Telescope observations of the jet launching and collimation in Centaurus A" Janssen, M. ... **Chan, C.-k..**; et al. 2021 Nature Astronomy, 5, 1017
53. "Constraints on black-hole charges with the 2017 EHT observations of M87*" Kocherlakota, P. ... **Chan, C.-k..**; et al. 2021 PhRvD, 103, 104047
52. "Ten simple rules to cultivate transdisciplinary collaboration in data science" Sahneh, F.; Balk, M.A.; Kisley, M.; **Chan, C.-k..**; et al. 2021 PLOS Computational Biology, vol 17, issue 5, p. e1008879
51. "The Polarized Image of a Synchrotron-emitting Ring of Gas Orbiting a Black Hole" Narayan, R. ... **Chan, C.-k..**; et al. 2021 ApJ, 912, 35
50. "Broadband Multi-wavelength Properties of M87 during the 2017 Event Horizon Telescope Campaign" EHT MWL Science Working Group ... **Chan, C.-k..**; et al. 2021 ApJL, 911, 11
49. "Polarimetric Properties of Event Horizon Telescope Targets from ALMA" Goddi, C. ... **Chan, C.-k..**; et al. 2021 ApJL, 910, 14
48. "First M87 Event Horizon Telescope Results. VIII. Magnetic Field Structure near The Event Horizon" EHT Collaboration ... **Chan, C.-k..**; et al. 2021 ApJL, 910, 13
47. "First M87 Event Horizon Telescope Results. VII. Polarization of the Ring" EHT Collaboration ... **Chan, C.-k..**; et al. 2021 ApJL, 910, 12
46. "FANTASY: User-friendly Symplectic Geodesic Integrator for Arbitrary Metrics with Automatic Differentiation" Christian, P. and **Chan, C.-k..** 2021 ApJ, 909, 67
45. "Gravitational Test beyond the First Post-Newtonian Order with the Shadow of the M87 Black Hole" Psaltis, D. ... **Chan, C.-k..**; et al. 2020, PRL, 125, 14
44. "Monitoring the Morphology of M87* in 2009-2017 with the Event Horizon Telescope" Wielgus, M. ... **Chan, C.-k..**; et al. 2020 ApJ, 901, 67
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