Katherine (Katie) L. Bouman

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</table>

POSITIONS

Associate Professor	2024 - Present
Heritage Medical Research Institute Investigator	2021 - Present
Rosenberg Scholar	2019 - Present
Assistant Professor	2019-2024

California Institute of Technology Departments of Computing and Mathematical Sciences, Electrical Engineering, and Astronomy

RESEARCH INTERESTS

Computational imaging, computational photography, computer vision, image and video processing, inverse problems, and machine learning

EDUCATION

Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA   2017 - 2019
Postdoctoral Fellow

Massachusetts Institute of Technology, Cambridge, MA, USA   2011 - 2017
Ph.D. Student in Electrical Engineering and Computer Science
Minor in Brain and Cognitive Sciences

- Thesis: "Extreme Imaging via Physical Model Inversion: Seeing Around Corners and Imaging Black Holes"
- Advisor: William Freeman

Massachusetts Institute of Technology, Cambridge, MA, USA   2011 - 2013
M.S. in Electrical Engineering and Computer Science

- Thesis: "Estimating the Material Properties of Fabric Through the Observation of Motion"
- Advisor: William Freeman

University of Michigan, Ann Arbor, MI, USA   2007 - 2011
B.S.E in Electrical Engineering Summa Cum Laude
Minor in Mathematics

SELECTED HONORS AND AWARDS

PAMI Young Researcher Award Honorable Mention - "for a distinguished research contribution in computer vision by a young researcher within seven years of their PhD" - 2024

Sloan Research Fellowship - 2024

Michigan Engineering Outstanding Recent Alumni Award - 2023

Tau Beta Pi Distinguished Alumnus Award - 2022

Royal Photographic Society Progress Medal - 2021

NSF CAREER Award - 2021

AAAS Early Career Award for Public Engagement Finalist - 2021

Royal Astronomical Society Group Award - Co-recipient with The EHTC - 2021

Caltech GSC Faculty Teaching Award - 2020

Society for Imaging Science and Technology Scientist of the Year Award - 2020

Breakthrough Prize in Fundamental Physics - Co-recipient with The EHTC - 2020

AAS Bruno Rossi Prize - Co-recipient with The EHTC - 2020

Albert Einstein Society Einstein Medal - Co-recipient with The EHTC - 2020

National Space Club and Foundation Nelson P. Jackson Award - Co-recipient with The EHTC -

2020

Okawa Research Grant - 2020

Event Horizon Telescope Early Career Award - "for her contributions in developing the imaging algorithms and analysis tools that enabled creating the first image of a black hole, and her leadership in developing a blind comparison framework, leading to the results published in the first six papers of the EHT" - 2020

American Ingenuity Award in Physical Sciences - Co-recipient with The EHTC - 2019

NSF Diamond Achievement Award - Co-recipient with The EHTC - 2019

BBC 100 Women Award - 2019

Ernst A. Guillemin Thesis Prize - 2014

NSF Graduate Fellowship - 2011

Barry M. Goldwater Scholarship - 2009

William Harvey Seeley Prize - 2008

PUBLICATIONS IN REVIEW

* denotes equal contribution

B.T. Feng, R. Baptista, K.L. Bouman, 2024. "Neural Approximate Mirror Maps for Constrained Diffusion Models."

B. Zhao, A. Levis, L. Connor, P.P. Srinivasan, K.L. Bouman, 2024. "Revealing the 3D Cosmic Web through Gravitationally Constrained Neural Fields."

H. Zheng*, W. Chu*, B. Zhang*, Z. Wu*, A. Wang, B. Feng, C. Zou, Y. Sun, N. Borislavov Kovachki, Z.E. Ross, K.L. Bouman, Y. Yue, 2024. "InverseBench: Benchmarking Plug-and-Play Diffusion Models for Inverse Problems in Physical Sciences."

PEER REVIEWED PUBLICATIONS

B.Y. Feng, R. Ferrer-Chávez, A. Levis, J.J. Wang, K.L. Bouman, and W.T. Freeman, 2024. "Exoplanet Imaging via Differentiable Rendering." *IEEE Transactions on Computational Imaging (in press)*

Z. Wu, Y. Sun, Y. Chen, B. Zhang, Y. Yue, K.L. Bouman, 2024. "Principled Probabilistic Imaging using Diffusion Models as Plug-and-Play Priors." *Proceedings of the The Conference and Workshop on Neural Information Processing Systems (NeuIPS) (in press)*

B. Feng, K.L. Bouman, W.T.Freeman, 2024. "Event-horizon-scale Imaging of M87* under Different Assumptions via Deep Generative Image Priors." *The Astrophysical Journal*

B. Feng, K.L. Bouman, 2024. "Variational Bayesian Imaging with an Efficient Surrogate Score-based Prior." *Transactions on Machine Learning Research (TMLR)*

Y. Sun, Z. Wu, Y. Chen, B.T. Feng, K.L. Bouman, 2024. "Provable Probabilistic Imaging using Score-based Generative Priors." *IEEE Transactions on Computational Imaging*

Z. Wu, T. Yin, Y. Sun, R. Frost, A. van der Kouwe, A.V. Dalca, K.L. Bouman, 2024. "Learning Task-Specific Strategies for Accelerated MRI." *IEEE Transactions on Computational Imaging*

A.C. Ogren, B.T. Feng, K.L. Bouman, C. Daraio, 2024. "Gaussian process regression as a surrogate model for the computation of dispersion relations." *Computer Methods in Applied Mechanics and Engineering*

J.C. Algaba, M. Balokovic, S. Chandra, W.-Y. Cheong, Y.-Z. Cui, K. Akiyama, A. Alberdi, W.

Alef, R. Anantua, K. Asada, R. Azulay, U. Bach, A.-K. Baczko, B. Bandyopadhyay, J. Barrett, M. Bauböck, B.A. Benson, D. Bintley, L. Blackburn, R. Blundell, K.L. Bouman, et al., 2024. "Broadband Multi-wavelength Properties of M87 during the 2018 EHT Campaign and a Very High Energy Flaring Episode." *Astronomy & Astrophysics*

A.W. Raymond, S.S. Doeleman, K. Asada, L. Blackburn, G.C. Bower, M. Bremer, D. Broguiere, M-T. Chen, G.B. Crew, S. Dornbusch, V.L. Fish, R. Garcia, O. Gentaz, C. Goddi, C-C. Han, M.H. Hecht, Y-D. Huang, M. Janssen, G.K. Keating, J.Y. Koay, T.P. Krichbaum, W-P. Lo, S. Matsushita, L.D. Matthews, J.M. Moran, T.J. Norton, N. Patel, D.W. Pesce, V. Ramakrishnan, H. Rottmann, A.L. Roy, S. Sanchez, R.P.J. Tilanus, M. Titus, P. Torne, J. Wagner, J. Weintroub, M. Wielgus, A. Young, K. Akiyama, E. Albentosa-Ruíz, A. Alberdi, W. Alef, J.C. Algaba, R. Anantua, R. Azulay, U. Bach, A-K. Baczko, D. Ball, M. Balokovic, B. Bandyopadhyay, J. Barrett, M. Baubock, B.A. Benson, D. Bintley, R. Blundell, K.L. Bouman, et al., 2024. "First Very Long Baseline Interferometry Detections at 870 μm." *The Astrophysical Journal*

A. Levis, A. Chael, K.L. Bouman, M. Wielgus, P.P. Srinivasan, 2024 " Orbital Polarimetric Tomography of a Flare Near the Sagittarius A* Supermassive Black Hole". *Nature Astronomy*

B. Zhao, A. Levis, L. Connor, P.P. Srinivasan, K.L. Bouman, 2024 "Single View Refractive Index Tomography with Neural Fields". *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*

Y.Y. Lin*, A.F. Gao*, K.L. Bouman, 2024 "Imaging An Evolving Black Hole By Leveraging Shared Structure". *ICASSP IEEE International Conference on Acoustics, Speech and Signal Processing*

S. Dey, S. Saha, B. Feng, M. Cui, L. Delisle, O. Leong, L.V. Wang, K.L. Bouman, 2024 "Score-Based Diffusion Models for Photoacoustic Tomography Image Reconstruction". *ICASSP IEEE International Conference on Acoustics, Speech and Signal Processing*

The Event Horizon Telescope Collaboration, et al, 2024. "First Sagittarius A* Event Horizon Telescope Results. VIII. Physical Interpretation of the Polarized Ring". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2024. "First Sagittarius A* Event Horizon Telescope Results. VII. Polarization of the Ring". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2024. "The Persistent Shadow of the Supermassive Black Hole of M87 I. Observations, Calibration, Imaging and Analysis". *Astronomy & Astrophysics*

The Event Horizon Telescope Collaboration, et al, 2024. "First M87 Event Horizon Telescope Results IX: Detection of Near-Horizon Circular Polarization". *The Astrophysical Journal Letters*

G.F. Paraschos, J.Y. Kim, M. Wielgus, J. Roder, T.P. Krichbaum, E. Ros, I. Agudo, I. Myserlis, M. Moscibrodzka, E. Traianou, J.A. Zensus, L. Blackburn, C.K. Chan, S. Issaoun, M. Janssen, M.D. Johnson, V.L. Fish, K. Akiyama, A. Alberdi, W. Alef, J.C. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A.K. Baczko, D. Ball, M. Balokovic, J. Barrett, M. Bauböck, B.A. Benson, D. Bintley, R. Blundell, K.L. Bouman, et. al, 2023. "Ordered magnetic fields around the 3C 84 central black hole". *Astronomy & Astrophysics*

F. Roelofs, M.D. Johnson, A. Chael, M. Janssen, M. Wielgus, A.E. Broderick, K. Akiyama, A. Alberdi, W. Alef, J.C. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A-K Baczko, D. Ball, M. Balokovic, J. Barrett, M. Bauböck, B.A. Benson, D. Bintley, L Blackburn, R. Blundell1, K.L. Bouman, 2023 "Polarimetric geometric modeling for mm-VLBI observations of black holes." *The Astrophysical Journal Letters*

O. Leong*, A. Gao*, H. Sun, K.L. Bouman, 2023. "Discovering Structure From Corruption for Unsupervised Image Reconstruction". *IEEE Transactions on Computational Imaging*

B. Feng, J. Smith, M. Rubinstein, H. Chang, K.L. Bouman, W.T. Freeman, 2023 "Score-Based Diffusion Models as Principled Priors for Inverse Imaging". *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*

A. Fuentes, J. Gómez, M. Martí, M. Perucho, G. Zhao, R. Lico, A. Lobanov, G. Bruni, Y. Kovalev, A. Chael, K. Akiyama, K.L. Bouman, H.Sun, I. Cho, E. Traianou, T. Toscano, R. Dahale, L. Gurvits, S. Jorstad, J. Kim, A. Marscher, Y. Mizuno, E. Ross, T. Savolainen, 2023. " The filamentary internal structure of the 3C279 blazar jet". *Nature Astronomy*

A. Gao*, O. Leong*, H. Sun, K.L. Bouman, 2023. "Image Reconstruction Without Explicit Priors". *IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP)*

M. Johnson, K. Akiyama, L. Blackburn, K.L. Bouman, A. Broderick, V. Cardoso, R. Fender, C. Fromm, P. Galison, J. Gómez, D. Haggard, M. Lister, A. Lobanov, S. Markoff, R. Narayan, P. Natarajan, T. Nichols, D. Pesce, Z. Younsi, A. Chael, K. Chatterjee, R. Chaves, J. Doboszewski, R. Dodson, S. Doeleman, J. Elder, G. Fitzpatrick, K. Haworth, J. Houston, S. Issaoun, Y. Kovalev, A. Levis, R. Lico, A. Marcoci, N. Martens, N. Nagar, A. Oppenheimer, D. Palumbo, A. Ricarte, M. Rioja, F. Roelofs, A. Thresher, P. Tiede, J. Weintroub, M. Wielgus, 2023. "Key Science Goals for the Next-Generation Event Horizon Telescope". *Galaxies*

S.S. Doeleman, J. Barrett, L. Blackburn, K.L. Bouman, et. al, 2023. "Reference Array and Design Consideration for the next-generation Event Horizon Telescope". *Galaxies*

S. Jorstad, M. Wielgus, R. Lico, S. Issaoun, A. Broderick, D. Pesce, J. Liu, G. Zhao, T. Krichbaum, L. Blackburn, C. Chan, M. Janssen, V. Ramakrishnan, K. Akiyama, A. Alberdi, J. Algaba, K.L. Bouman, et al., 2023. "The Event Horizon Telescope Image of the Quasar NRAO 530". *The Astrophysical Journal*

H. Okino, K. Akiyama, K. Asada, J. Gómez, K. Hada, M. Honma, T. Krichbaum, M. Kino, H. Nagai, U. Bach, L. Blackburn, K.L Bouman, et al., 2023. "Collimation of the Relativistic Jet in the Quasar 3C 273". *The Astrophysical Journal*

P. Torne, K. Liu, R.P. Eatough, J. Wongphechauxsorn, J.M. Cordes, G. Desvignes, M. De Laurentis, M. Kramer, S.M. Ransom, S. Chatterjee, R. Wharton, R. Karuppusamy, L. Blackburn, M. Janssen, C-K. Chan, G. B. Crew, L.D. Matthews, C. Goddi, H. Rottmann, J. Wagner, S. Sanchez, I. Ruiz, F. Abbate, G.C. Bower, J.J. Salamanca, A.I. Gomez-Ruiz, A. Herrera-Aguilar, W. Jiang, R-S. Lu, U-L. Pen, A.W. Raymond, L. Shao, Z. Shen, G. Paubert, M. Sanchez-Portal, C. Kramer, M. Castillo, S. Navarro, D. John, K-F. Schuster, M.D. Johnson, K.L.J. Rygl, K. Akiyama, A. Alberdi, W. Alef, J.C. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A-K. Baczko, D. Ball, M. Balokovic, J. Barrett, M. Bauboeck, B.A. Benson, D. Bintley, R. Blundell, K.L. Bouman, et al., 2023. "A search for pulsars around Sgr A* in the first Event Horizon Telescope dataset." *The Astrophysical Journal*

B.S. Prather, J. Dexter, M. Moscibrodzka, H-Y. Pu, T. Bronzwaer, J. Davelaar, Z. Younsi, C.F. Gammie, R. Gold, G.N. Wong, K. Akiyama, A. Alberdi, W. Alef, J.C. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A-K. Baczko, D. Ball, M. Balokovic, J. Barrett, M. Baubock, B.A. Benson, D. Bintley, L. Blackburn, R. Blundell, K.L. Bouman, et al., 2023. "Comparison of Polarized Radiative Transfer Codes used by the EHT Collaboration." *The Astrophysical Journal*

S. Jorstad, M. Wielgus, R. Lico, S. Issaoun, A. Broderick, D. Pesce, J. Liu, G. Zhao, T. Krichbaum, L. Blackburn, C. Chan, M. Janssen, V. Ramakrishnan, K. Akiyama, A. Alberdi, J. Algaba, K.L. Bouman, et al., 2022. "Resolving the Inner Parsec of the Blazar J1924-2914 with the Event Horizon

Telescope". *The Astrophysical Journal*

B. Feng, A. Orgen, C. Daraio , K.L. Bouman, 2022. "Visual Vibration Tomography: Estimating Interior Material Properties from Monocular Video". *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*

A. Levis*, P. Srinivasan*, A.A. Chael, R. Ng, K.L. Bouman, 2022. "Gravitationally Lensed Black Hole Emission Tomography". *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*

I. Natarajan, R. Deane, I. Martí-Vidal, F. Roelofs, M. Janssen, W. Maciek, L. Blackburn, T. Blecher, S. Perkins, O. Smirnov, J. Davelaar, M. Moscibrodzka, A. Chael, K.L. Bouman, et al., 2022. "MeqSilhouette v2: spectrally resolved polarimetric synthetic data generation for the event horizon telescope". *Monthly Notices of the Royal Astronomical Society*

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. III. Imaging of the Galactic Center Supermassive Black Hole". *The Astrophysical Journal Letters* (K.L. Bouman was a Paper Coordinator)

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. IV. Variability, Morphology, and Black Hole Mass". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. V. Testing Astrophysical Models of the Galactic Center Black Hole". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2022. "First Sagittarius A* Event Horizon Telescope Results. VI. Testing the Black Hole Metric". *The Astrophysical Journal Letters*, 930:L17

J. Farah, P. Galison, K. Akiyama, K.L. Bouman, et al., 2022. "Selective Dynamical Imaging of Interferometric Data". *The Astrophysical Journal Letters*

M. Wielgus, N. Marchili, I. Martí-Vidal, G. Keating, V. Ramakrishnan, P. Tiede, E. Fomalont, S. Issaoun, J. Neilsen, M. Nowak, L. Blackburn, C. Gammie, C. Goddi, D. Haggard, D. Lee, M. Moscibrodzka, A. Tetarenko, G. Bower, C. Chan, K. Chatterjee, P. Chesler, J. Dexter, S. Doeleman, B. Georgiev, M. Gurwell, M. Johnson, D. Marrone, A. Mus, D. Psaltis, B. Ripperda, G. Witzel, K. Akiyama, A. Alberdi, W. Alef, J. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A. Baczko, D. Ball, M. Baloković, J. Barrett, M. Bauböck, B. Benson, D. Bintley, R. Blundell, W. Boland, K.L. Bouman, et al., 2022. "Millimeter Light Curves of Sagittarius A* Observed during the 2017 Event Horizon Telescope Campaign". *The Astrophysical Journal Letters*

B. Georgiev, D. Pesce, A. Broderick, G. Wong, V. Dhruv, M. Wielgus, C. Gammie, C. Chan, K. Chatterjee, R. Emami, Y. Mizuno, R. Gold, C. Fromm, A. Ricarte, D. Yoon, A. Joshi, B. Prather, A. Cruz-Osorio, M. Johnson, O. Porth, H. Olivares, Z. Younsi, L. Rezzolla, J. Vos, R. Qiu, A. Nathanail, R. Narayan, R. Anantua, M. Moscibrodzka, K. Akiyama, A. Alberdi, W. Alef, J. Algaba, K. Asada,

R. Azulay, U. Bach, A. Baczko, D. Ball, M. Baloković, J. Barrett, M. Bauböck, B. Benson, D. Bintley, L. Blackburn, R. Blundell, K.L. Bouman, et al., 2022. "A Universal Power-law Prescription for Variability from Synthetic Images of Black Hole Accretion Flows". *The Astrophysical Journal Letters*

Broderick, R. Gold, B. Georgiev, D. Pesce, P. Tiede, C. Ni, K. Moriyama, K. Akiyama, A. Alberdi, W. Alef, J. Algaba, R. Anantua, K. Asada, R. Azulay, U. Bach, A. Baczko, D. Ball, M. Baloković, J. Barrett, M. Bauböck, B. Benson, D. Bintley, L. Blackburn, R. Blundell, K.L. Bouman, et al., 2022. "Characterizing and Mitigating Intraday Variability: Reconstructing Source Structure in Accreting Black Holes with mm-VLBI". *The Astrophysical Journal Letters*

H. Sun, K.L. Bouman, P. Tiede, J.J. Wang, S. Blunt, D. Mawet, 2022. "α-deep Probabilistic Inference (-DPI): Efficient Uncertainty Quantification from Exoplanet Astrometry to Black Hole Feature Extraction". *The Astrophysical Journal*

L. Connor, K.L Bouman, V. Ravi, G. Hallinann, 2022. "Deep radio-interferometric imaging with POLISH: DSA-2000 and weak lensing". *Monthly Notices of the Royal Astronomical Society*

R.K. Cosner*, I.D. Jimenez Rodriguez*, T.G. Molnar, W. Ubellacker, Y. Yue, A.D. Ames, K.L. Bouman, 2022. "Self-Supervised Online Learning for Safety-Critical Control using Stereo Vision". *Proceedings of the 39th International Conference on Robotics and Automation (ICRA)*

T. Yin*, Z. Wu*, H. Sun, A.V. Dalca, Y. Yue, K.L. Bouman, 2021. "End-to-End Sequential Sampling and Reconstruction for MR Imaging". *Proceedings of the Machine Learning for Health Conference (ML4H)*

A. Gao, J. Castellanos, Y. Yue, Z. Ross, K.L. Bouman, 2021. "DeepGEM: Generalized Expectation-Maximization for Blind Inversion". *Proceedings of the The Conference and Workshop on Neural Information Processing Systems (NeuIPS)*

A. Levis, D. Lee, J.A. Tropp, C.F. Gammie, K.L. Bouman, 2021. "Inference of Black Hole Fluid-Dynamics from Sparse Interferometric Measurements". *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*

R.K. Cosner, A.W. Singletary, A.J. Taylor, T.G. Molnar, K.L. Bouman, A.D. Ames, 2021. "Measurement-Robust Control Barrier Functions: Certainty in Safety with Uncertainty in State". *Proceedings of the International Conference on Intelligent Robots and Systems (IROS)*

H. Sun, K.L. Bouman, 2021. "Deep Probabilistic Imaging: Uncertainty Quantification and Multi-modal Solution Characterization for Computational Imaging". *Proceedings of the AAAI Conference on Artificial Intelligence*

K. Satapathy, D. Psaltis, F. Özel, L. Medeiros, S. Dougall, C. Chan, M. Wielgus, B. Prather, G. Wong, C. Gammie, K. Akiyama, A. Alberdi, A. Antxon W. Alef, J. Algaba, R. Anantua, K. Asada, R. Azulay, A. Baczko, D. Ball, M. Baloković, J. Barrett, B. Benson, D. Bintley, L. Blackburn, R. Blundell, W. Boland, K.L. Bouman, et al., 2021. "The Variability of the Black Hole Image in M87 at the Dynamical Timescale". *The Astrophysical Journal*

M. Janssen, H. Falcke, M. Kadler, E. Ros, M. Wielgus, K. Akiyama, M. Baloković, L. Blackburn, K. Bouman, et al., 2021. "Event Horizon Telescope observations of the jet launching and collimation in Centaurus A". *Nature Astronomy*

P. Kocherlakota, L. Rezzolla, H. Falcke, C. Fromm, M. Kramer, Y. Mizuno, A. Nathanail, H. Olivares, Z. Younsi, K. Akiyama, A. Alberdi, W. Alef, J. Algaba, R. Anantua, K. Asada, R. Azulay,

A. Baczko, D. Ball, M. Baloković, J. Barrett, B. Benson, D. Bintley, L. Blackburn, R. Blundell, W. Boland, K.L. Bouman, et al., 2021. "Constraints on black-hole charges with the 2017 EHT observations of M87*". *Physical Review D*

R. Narayan, D. Palumbo, M. Johnson, Z. Gelles, E. Himwich, D. Chang, A. Ricarte, J. Dexter, C. Gammie, A. Chael, The Event Horizon Telescope Collaboration, K. Akiyama, A. Alberdi, W. Alef, J. Algaba, R. Anantua, K. Asada, R. Azulay, A. Baczko, D. Ball, M. Baloković, J. Barrett, B. Benson, D. Bintley, L. Blackburn, R. Blundell, W. Boland, K.L. Bouman et al., 2021. "The Polarized Image of A. Synchrotron Emitting Ring of Gas Orbiting A. Black Hole". *The Astrophysical Journal*

EHT MWL Science Working Group, J. Algaba, J. Anczarski, M. Baloković, S. Chandra, Y. Cui, A. Falcone, M. Giroletti, C. Goddi, K. Hada, D. Haggard, S. Jorstad, A. Kaur, T. Kawashima, G. Keating, J. Kim, M. Kino, S. Komossa, E. Kravchenko, T. Krichbaum, S. Lee, R. Lu, M. Lucchini, S. Markoff, J. Neilsen, M. Nowak, M. A. J. Park, G. Principe, V. Ramakrishnan, M. Reynolds, M. Sasada, S. Savchenko, K. Williamson, Event Horizon Telescope Collaboration, K. Akiyama, A, Alberdi, W. Alef, R. Anantua, R. Azulay, A. Baczko, D. Ball, J. Barrett, D. Bintley, B. Benson, L. Blackburn, R. Blundell, W. Boland, K.L. Bouman, et al., 2021. "Broadband Multi-wavelength Properties of M87 During the 2017 Event Horizon Telescope Campaign". *The Astrophysical Journal Letters*

C. Goddi, I. Martí-Vidal, H. Messias, G. Bower, A. Broderick, J. Dexter, D. Marrone, M. Moscibrodzka, H. Nagai, J. Algaba, K. Asada, G. Crew, J. Gómez, C. Impellizzeri, J. Violette , M. Kadler, M. Krichbaum, T. Lico, R. Matthews, L. Nathanail, A. Ricarte, E. Ros, Z. Younsi, K. Akiyama, A. Alberdi, W. Alef, R. Anantua, R. Azulay, A. Baczko, D. Ball, M. Baloković, J. Barrett, B. Benson, D. Bintley, L. Blackburn, R. Blundell, W. Boland, K.L. Bouman, et al., 2021. "Polarimetric Properties of Event Horizon Telescope Targets from ALMA". *The Astrophysical Journal Letters*

J.Cardona, K.L.Bouman, J.Dabiri, 2021."Wind speed inference from environmental flow-structure interactions". *Flow*

The Event Horizon Telescope Collaboration, et al, 2021. "First M87 Event Horizon Telescope Results. VII. Polarization of the Ring". *The Astrophysical Journal Letters*

The Event Horizon Telescope Collaboration, et al, 2021. "First M87 Event Horizon Telescope Results. VIII. Magnetic Field Structure near The Event Horizon". *The Astrophysical Journal Letters*

H. Sun, A.V. Dalca, K.L. Bouman, 2020. "Learning A. Probabilistic Strategy for Computational Imaging Sensor Selection". *Proceedings of the International Conference on Computational Photography (ICCP).*

M. Wielgus, K. Akiyama, L. Blackburn, C. Chan, J. Dexter, S. Doeleman, V. Fish, S. Issaoun, M. Johnson, T. Krichbaum, R. Lu, D. Pesce, G. Wong, G. Bower, A. Broderick, A. Chael, K. Chatterjee, C. Gammie, B. Georgiev, K. Hada, L. Loinard, S. Markoff, D. Marrone, R. Plambeck, J. Weintroub, M. Dexter, D. MacMahon, M. Wright, A. Alberdi, W. Alef, K. Asada, R. Azulay, A. Baczko, D. Ball, M.Baloković, E. Barausse, J. Barrett, D. Bintley, W. Boland, K.L. Bouman, et al., 2020. "Monitoring the Asymmetric Ring Morphology of M87* in 2009–2017 with the Event Horizon Telescope" *The Astrophysical Journal*

J. Kim, T. Krichbaum, A. Broderick, M. Wielgus, L. Blackburn, J. Gómez, M. Johnson, K.L. Bouman, et al., 2020. "Event Horizon Telescope imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution" *Astronomy Astrophysics*

R. Gold, A. Broderick, Z. Younsi, C. Fromm, C. Gammie, M. Mościbrodzka, H. Pu, T. Bronzwaer,

J. Davelaar, J. Dexter, D. Ball, David ; C. Chan, T. Kawashima, Y. Mizuno, B. Ripperda, K. Akiyama, A. Alberdi, W. Alef, K. Asada, R. Azulay, A. Baczko, M. Baloković, J. Barrett, D. Bintley, L. Blackburn, W. Boland, K.L. Bouman, et al., 2020. "Verification of Radiative Transfer Schemes for the EHT" *The Astrophysical Journal*

A. Broderick, R. Gold, M. Karami, J. Preciado-López, P. Tiede, H. Pu, K. Akiyama, A. Alberdi, W. Alef, K. Asada, R. Azulay, A. Baczko, M. Baloković, J. Barrett, D. Bintley, L. Blackburn, W. Boland, K.L. Bouman, et al., 2020. "THEMIS: A. Parameter Estimation Framework for the Event Horizon Telescope" *The Astrophysical Journal*

JY Kim, TP Krichbaum, AE Broderick, M. Wielgus, L. Blackburn, JL Gomez, M.D. Johnson, K.L. Bouman, A. Chael, K. Akiyama, S. Jorstad, AP Marscher, S. Issaoun, M. Janssen, CK Chan, T. Savolainen, D. Pesce, F. Ozel, and the Event Horizon Telescope Collaboration, 2020. "Event Horizon Telescope imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution" *Astronomy & Astrophysics*

F. Roelofs, M. Janssen, I. Natarajan, R. Deane, J. Davelaar, H. Olivares, O. Porth, SN Paine, K.L. Bouman, et al., 2020. "SYMBA: An end-to-end VLBI synthetic data generation pipeline" *Astronomy & Astrophysics*

L. Blackburn, C. Chan, GB Crew, V.L. Fish, S. Issaoun, M.D. Johnson, M. Wielgus, K. Akiyama, J. Barrett, K.L. Bouman, R. Cappallo, AA Chael, M. Janssen, CJ Lonsdale, S.S. Doeleman, 2019. "EHT-HOPS pipeline for millimeter VLBI data reduction" *The Astrophysics Journal*

K. Haworth, M. Johnson, D. Pesce, D. Palumbo, L. Blackburn, K.L. Bouman, J. Farah, V. Fish, M. Honma, T. Kawashima, M. Kino, A. Raymond, M. Silver, J. Weintroub, M. Wielgus, S. Doeleman, J. Gomez, J. Kauffmann, G. Keating, T. Krichbaum, L. Loinard, G. Narayanan, A. Doi, D. James, D. Marrone, Y. Mizuno, H. Nagai, 2019. "Studying black holes on horizon scales with space-VLBI" *Bulletin of the American Astronomical Society*

DCM Palumbo, S.S. Doeleman, M.D. Johnson, K.L. Bouman, AA Chael, 2019. "Metrics and Motivations for Earth-Space VLBI: Time-Resolving Sgr A* with the Event Horizon Telescope" *The Astrophysics Journal*

O. Porth, K. Chatterjee, R. Narayan, C. Gammie, Y. Mizuno, P. Anninos, J. Baker, M. Bugli, C. Chan, J. Davelaar, L. Del Zanna, Z. Etienne, C. Fragile, B. Kelly, M. Liska, S. Markoff, J. McKinney, B. Mishra, S. Noble, H. Olivares, B. Prather, L. Rezzolla, B. Ryan, J. Stone, N. Tomei, C. White, Z. Younsi, K. Akiyama, A. Alberdi, W. Alef, K. Asada, R. Azulay, A. Baczko, D. Ball, M. Baloković, J. Barrett, D. Bintley, L. Blackburn, W. Boland, K.L. Bouman, et al., 2019. " The Event Horizon General Relativistic Magnetohydrodynamic Code Comparison Project" *The Astrophysical Journal Supplement Series*

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. IV. Imaging the Central Supermassive Black Hole." *The Astrophysics Journal Letters* (K.L. Bouman was a Paper Coordinator)

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole." *The Astrophysics Journal Letters*

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. II. Array and Instrumentation." *The Astrophysics Journal Letters*

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. III. Data Processing and Calibration." *The Astrophysics Journal Letters*

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. V. Physical Origin of the Asymmetric Ring." *The Astrophysics Journal Letters*

The Event Horizon Telescope Collaboration, et al., 2019. "First M87 Event Horizon Telescope Results. VI. The Shadow and Mass of the Central Black Hole." *The Astrophysics Journal Letters*

S. Issaoun, MD. Johnson, L. Blackburn, CD Brinkerink, M. Moscibrodzka, A. Chael, C. Goddi, I. Marti-Vidal, J. Wagner, S.S. Doeleman, H. Falcke, TP Krichbaum, K. Akiyama, U. Bach, K.L. Bouman, GC Bower, A. Broderick, I. Cho, G. Crew, J. Dexter, V. Fish, R. Gold, JL Gomez, K. Hada, A. Hernandez-Gomez, M. Janssen, M. Kino, M. Kramer, L. Loinard, R-S Lu, S. Markoff, DP Marrone, LD Matthews, JM Moran, C. Muller, F. Roelofs, E. Ros, H. Rottmann, S. Sanchez, RP. J. Tilanus, P. de Vicente, M. Wielgus, JA Zensus, G-Y Zhao, 2019. "The Size, Shape, and Scattering of Sagittarius A* at 86 GHz: First VLBI with ALMA". *The Astrophysics Journal*

AV Dalca, K.L. Bouman, WT Freeman, MR Sabuncu, NS Rost, P. Golland, 2018. "Medical Image Imputation from Image Collections". *IEEE Transactions on Medical Imaging*

T Xue*, J. Wu*, K.L. Bouman, WT Freeman, 2018. "Visual Dynamics: Stochastic Future Generation via Layered Cross Convolutional Networks". *(TPAMI)*

K.L. Bouman, M.D. Johnson, AV Dalca, A. Chael, F. Roelofs, S.S. Doeleman, WT Freeman, 2018. "Reconstructing Video of Time-Varying Sources from Radio Interferometric Measurements". *IEEE Transactions on Computational Imaging*

A. Chael, , M.D. Johnson, K.L. Bouman, L. Blackburn, K. Akiyama, R. Narayan, 2018. "Interferometric Imaging Directly with Closure Phases and Closure Amplitudes". *The Astrophysics Journal*

K.L. Bouman, V. Ye, AB Yedidia, F. Durand, GW Wornell, A. Torralba, WT Freeman, 2017. "Turning Corners into Cameras: Principles and Method". *Proceedings of the International Conference on Computer Vision (ICCV)*

AV Dalca, K.L. Bouman, WT Freeman, MR Sabuncu, NS Rost, P. Golland, 2017. "Population Based Image Imputation". *Proceedings of the International Conference on Information Processing and Medical Imaging (IPMI)*

M.D. Johnson, K.L. Bouman, L. Blackburn, A. Chael, J. Rosen, H. Shiokawa, F. Roelofs, K. Akiyama, VL. Fish, S.S. Doeleman, 2017. "Dynamical Imaging with Interferometry". *The Astrophysics Journal*

K. Akiyama, K. Kuramochi, S. Ikeda, V.L. Fish, F. Tazaki, M. Honma, S.S. Doeleman, A. Broderick, J. Dexter, M. Moscibrodzka, K.L. Bouman, A. Chael, M. Zaizen, 2017. "Imaging the Schwarzschild-radius-scale Structure of M87 with the Event Horizon Telescope using Sparse Modeling". *The Astrophysical Journal*

A. Davis*, K.L. Bouman*, JG Chen, M. Rubinstein, O. Buyukozturk, Durand, WT Freeman, 2017. "Visual Vibrometry: Estimating Material Properties from Small Motions in Video". *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*

T. Xue*, J. Wu*, K.L. Bouman, WT Freeman, 2016. "Visual Dynamics: Probabilistic Future Frame Synthesis via Cross Convolutional Networks". *Proceedins of The Conference and Workshop on Neural Information Processing Systems (NIPS)*

K.L. Bouman, M.D. Johnson, D. Zoran, V.L. Fish, S.S. Doeleman, WT Freeman, 2016. "Computational Imaging for VLBI Image Reconstruction". *Proceedings of the IEEE Conference on Computer*

Vision and Pattern Recognition (CVPR)

V.L. Fish, K. Akiyama, K.L. Bouman, A. Chael, M.D. Johnson, S.S. Doeleman, L. Blackburn, JFC Wardle, WT Freeman, 2016. "Observing and Imaging Active Galactic Nuclei with the Event Horizon Telescope". *Galaxies*

A Chael, M.D. Johnson, R. Narayan, S.S. Doeleman, JFC Wardle, K.L. Bouman, 2016. "High Resolution Linear Polarimetric Imaging for the Event Horizon Telescope". *The Astrophysical Journal*

A Davis*, K.L. Bouman*, JG Chen, M. Rubinstein, F. Durand, WT Freeman, 2015. "Visual Vibrometry: Estimating Material Properties from Small Motions in Video". *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*

VL Fish, M.D. Johnson, R. Lu, S. Doeleman, K.L. Bouman, D. Zoran, WT Freeman, D. Psaltis, R. Narayan, V. Pankratius, A. Broderick, C. Gwinn, L. Vertatschitsch, 2014. "Imaging an Event Horizon: Mitigation of Scattering toward Sagittarius A*". *The Astrophysical Journal*

K.L. Bouman, B. Xiao, P. Battaglia and W. Freeman, 2013. "Estimating the Material Properties of Fabric Through Observation of Motion". *Proceedings of the IEEE International Conference on Computer Vision (ICCV)* .

K Ni, E. Phelps, K.L. Bouman, and N. Bliss, 2012. "Training image classifiers with similarity metrics, linear programming, and minimal supervision". *Proceedings of the Asilomar Conference on Signals, Systems, and Computers. (Asilomar)* .

K.L. Bouman, V. Ramachandra, K. Atanassov, M. Aleksic, and SR Goma, 2011. "RAW camera DPCM compression performance analysis". *Proceedings of SPIE-IS&T Electronic Imaging.*

K.L. Bouman, G. Abdollahian, M. Boutin, and EJ Delp, 2011. "A low complexity sign detection and text localization method for mobile applications". *IEEE Transactions on Multimedia*

K.L. Bouman, G. Abdollahian, M. Boutin, and E.J. Delp, 2010. "A low complexity method for detection of text area in natural images". *Proceedings of the International Conference on Acoustics Speech and Signal Processing (ICASSP)*

INVITED TALKS & PANELS	*Argonne National Lab Applied AI talk.* (virtual). December, 2024.
	UC Irvine Inverse Problems Seminar. (virtual). December, 2024.
	UC Davis Math Data Science Seminar. (virtual). October, 2024.
	Stanford/KIPAC Astrophysics Colloquium. Palo Alto, CA. October, 2024.
	MIT NSF AI Institute for Artificial Intelligence and Fundamental Interactions (IAIFI) Colloquium. Cambridge, MA. September, 2024.
	Keynote talk at CVPR's Computational Cameras and Displays (CCD) Workshop. Seattle, WA.

June, 2024.

Keynote talk at the GRC 2024 Image Science Conference. Newry, ME. June, 2024.

Talk for the Caltech Associates. Orange County, CA. April, 2024.

Princeton PACM Colloquium. Princeton, NJ. March, 2024.

Physics & Astronomy Department Colloquium at Pomona College. Claremont, CA. March, 2024.

University of Arizona Wyant College of Optical Sciences Colloquium. Tuscan, AZ. March, 2024.

Microsoft Research (MSR) Colloquium. (virtual). October 2023

Keynote talk at WiSTEM. Cambridge, MA. August 2023.

Keynote talk at IEEE Space Computing Conference. Cambridge, MA. July 2023.

MIT CSAIL's 20/60th Anniversary. Cambridge, MA. June 2023.

University of Toronto Data Sciences Institute. November 2022. (virtual)

MIT CCSE Distinguished Seminar Series. (virtual). November 2022.

Caltech's CMS Distinguished H. B. Keller Colloquium. Pasadena, CA. November 2022.

NSF to Minister of Finance and Corporate Affairs of India. (virtual). October 2022

IPAM Diffractive Imaging with Phase Retrieval. Los Angeles, CA. October 2022.

Keynote talk at Pepperdine Human Centered-AI Conference. Malibu, CA. September 2022.

Keynote talk at DARPA ISAT Summer Meeting. San Diego, CA. August 2022.

Keynote talk at Women in STEM (WiSTEM). Pasadena, CA. August 2022.

Keynote talk at ICML workshop on Machine Learning for Astrophysics. (virtual). July 2022.

IBM Research Distinguished Speaker Series. (virtual). July 2022.

Keynote talk at Neurosymbolic Programming Summer School. Pasadena, CA. July 2022.

Keynote talk at Eurographics Symposium on Rendering (EGSR). Prauge, Czech Republic. July 2022.

European Astronomical Society Annual Meeting. Valencia, Spain. June 2022.

Public invited talk at Astro on Tap. Pasadena, CA .June 2022.

Commencement Speaker to Class of 2020 at Grinnell College. (virtual). June 2022.

Panelist for presenting the first results of EHT Sgr A* Imaging at the NSF Press Conference. Washington DC, 2022.

UC Riverside. Riverside, CA. April 2022

Keynote Talk at SIAM Imaging Sciences. (virtual). March 2022.

MERL. February 2022. (virtual)

EI Conference on Machine Learning for Scientific Imaging. (virtual). January 2022.

Pixar. (virtual). January 2022.

URSI/USNC. (virtual). January 2022.

University of Michigan Institute for Data Science (MIDAS) . Ann Arbor, MI. December 2021.

Excellence Cluster Machine Learning Tübingen Seminar Series. (virtual). December 2021.

University of California San Diego. San Diego, CA. November 2021.

University of Washington in St. Louis. St. Louis, MO. November 2021.

OSA FiO Machine Learning + Optics. (virtual). November 2021.

Asilomar "Blending Physics and Learning for Computational Imaging" Special Session. (virtual).

November 2021.

EPFL Center for Imaging Seminar Series. (virtual). October 2021.

Keynote talk at PROBPROG Conference. (virtual). October 2021.

Workshop on "The physics of earthquake faulting: machine learning to illuminate earthquake precursors and predict laboratory earthquakes". Rome, Italy. September 2021.

CMU's Quarks to Cosmos Workshop. (virtual). July 2021.

Keynote talk at CVPR. (virtual). June 2021.

Stanford Vision Lab. (virtual). June 2021.

Public Talk at Palomar Observatory. (virtual). June 2021.

Los Alamos National Laboratory. (virtual). June 2021.

Sony Professor Lecture Series Invited Talk. (virtual). April 2021.

Oak Ridge National Laboratory. (virtual). April 2021.

Distinctive Voices - National Academy of Sciences. (virtual). January 2021.

PARC (virtual). January 2021.

Harvard Medical School (virtual). January 2021.

Colloquium in the College of Optical Sciences at the University of Arizona (virtual). January 2021.

University of Edinburgh (virtual). December 2020.

Federal University of Rio de Janeiro (virtual). December 2020.

Learning Meets Combitorial Algorithms Workshop at NeurIPS (virtual). December 2020.

Caltech Astro Public Lecture and Stargazing Series Speaker (virtual). November 2020

Plenary Speaker at Asilomar (virtual). November 2020

Physics Colloquium at The Center for Research and Advanced Studies in Mexico City (virtual). October 2020.

Plenary at the IEEE International Conference on Image Processing (ICIP) (virtual). October 2020.

Innogural Keynote for the Robotics, Vision, and Graphics Program at Universidad de Zaragoza (virtual). October 2020.

Art+Science (Elementry School Girls at the MIT Museum) (virtual). October 2020.

Keynote at the Real-World Computer Vision from Inputs with Limited Quality Workshop (virtual). August 2020.

ICML Workshop on ML Interpretability for Scientific Discovery (virtual). July 2020.

Plenary at the OSA Imaging and Applied Optics Congress (virtual). June 2020.

University of Waterloo Astro Seminar (virtual). June 2020.

Commencement Speaker at Grinnell College Grinnell, IA (canceled due to COVID-19). May 2020.

Caltech Seminar Day (virtual). May 2020.

Fireside chat speaker at MARS 2020 (canceled due to COVID-19). March 2020.

Aronson Lecture - Purdue University West Lafayette, IN. March 2020.

STROBE Seminar - UCLA Los Angeles, CA. February 2020.

Keynote at the Google Computational Imaging Workshop. Mountain View, CA. February 2020.

Astronomy Department Colloquium - University of Virginia. Charlottesville, VA. January, 2020.

Keynote at Electronic Imaging (EI) Conference. San Francisco, CA. January 2020.

Astronomy Department Colloquium - University of Michigan. Ann Arbor, MI. January, 2020.

Keynote at NeurIPS Machine Learning and the Physical Sciences. Vancouver, Canada. December

2019

Public talk at Owens Valley Radio Observatory Seminar Series. Big Pine, CA. November 2019.

Keynote at SC19: The International Conference for High Performance Computing, Networking, Storage, and Analysis. Denver, CO. November 2019.

EPFL Open Science Day. Lausanne, Switzerland. October 2019.

Keynote at Spark + AI Conference Amsterdam, The Netherlands. October 2019.

Computational Imaging Workshop at the Institute for Mathematics and its Applications (IMA) - University of Minnesota. Minneapolis, Minnesota. October 2019.

Keynote at .NEXT Conference. Copenhagen, Denmark. October 2019.

Keynote at the Cisco Data Symposium. San Jose, CA. September 2019.

Jet Propulsion Laboratory (JPL). La Canada Flintridge, CA. September 2019.

Event Horizon Telescope Dynamics Meeting. Waterloo, Canada. August 2019.

Keynote Frontiers talk at ACM SIGGRAPH. Los Angeles, CA. July 2019.

NASA Ames Summer Series, NASA Ames Research Center. Moffett Field, CA. July 2019.

Summer Undergraduate Research Fellowship (SURF) Seminar Series, Caltech. Pasadena, CA. June 2019.

Testimony at the House Committee on Science, Space, and Technology. U.S. House of Representatives Washington, DC. May 2019.

Board of Trustees of Associated Universities, Inc (AUI) meeting. Boston, MA. May 2019.

NERQEM. Cambridge, MA. May 2019.

MIT CSAIL Faculty Gala. Cambridge, MA. May 2019.

EE Seminar Series, University of California - Berkeley. Berkeley, CA. April 2019.

Stanford University. Palo Alto, CA. April 2019.

Harvard SCIEN Seminar Series. Cambridge, MA. April 2019.

ICERM Computational Imaging workshop. Brown University. Providence, RI. March 2019.

Q&A panelist at Harvard Data Science Everywhere. Cambridge, MA. March 2019.

Q&A panelist at Caltech Board of Trustees Annual Meeting. Newport Coast, CA. October 2018.

Allerton Conference on Communication, Control, and Computing. Allerton, IL. October 2018.

the SMA Advisory Committee Meeting. Cambridge, MA. July 2018.

The Optical Society's Meeting on Computational Optical Sensing and Imaging (COSI). Orlando, FL. June 2018.

International Conference on Computational Photography (ICCP). Pittsburgh, OH. May 2018.

Interferometry Workshop. Lexington, MA. April 2018.

Keynote talk at New England Computer Vision Workshop (NECV). Boston, MA. November 2017.

Harvard Astrostatistics Day. Cambridge, MA. September 2017.

Public talk at the Boston Museum of Science. Boston, MA. May 2017.

Talk at TEDx Beacon Street. Boston, MA. November 2016.

ICCV's Extreme Imaging Workshop. Santiago, Chile. December 2015.

the mm-VLBI Data Processing Workshop. Liden, Netherlands. June 2015.

Invited Tutorial at the IEEE Imaging Technology Processing and Applications Course. MIT Lincoln Laboratory. Lexington, MA. November 2012

TEACHING   **Ph.D. Thesis Supervision**
Nitika Yadlapalli - Ph.D. in Astronomy from Caltech (co-advisor with Vikram Ravi)   *2018 - 2023*

Berthy Feng - Ph.D. in CMS from Caltech   *2019 - Present*
Angela Gao - Ph.D. in CMS from Caltech   *2019 - Present*
Zihui (Ray) Wu - Ph.D. in CMS from Caltech   *2020 - Present*
Brandon Zhao - Ph.D. in CMS from Caltech   *2021 - Present*
Bingliang Zhang - Ph.D. in CMS from Caltech (co-advisor with Yisong Yue)   *2023 - Present*
Frederick Wang - Ph.D. in CMS from Caltech   *2024 - Present*

Postdoc Supervision
He Sun   *2019 - 2022*
Aviad Levis   *2020 - 2024*
Oscar Leong   *2021 - 2024*
Yu Sun   *2022 - 2024*

Thesis and/or Candidacy Committee Member
Thesis Committee: Matteo Ruggero Ronchi, Connor Ballew, Zachary Lee, Serim Ryou, Elijah Cole, Sara Beery, Haoyu (Tony) Zhang, Cheng Shen, Matthew Levine, Peng Hu, Kyle Nelli, Alexander Ogren, Xiaoqiao Chen, Yujia Huang, Yuping Huang, Alexander Orgen, Kathryn Plant, Xiaoqiao Chen, Mingshu Liang, Freek Roelofs
Candidacy Committee: Benyamin Allahgholizadeh Haghi, Ryan Cosner, Dongyi (Lambda) Lu, Yinzi Xin, Kiran Shila, Yilin Luo, Haowen Zhou, Manxiu Cui, Hongkai Zheng, Cameron Voloshin, Liting Xiao, Guanzhi Wang

Instructor
CS/IDS/EE 166: Computational Cameras, Caltech   Spring 2020, 2021, 2022, 2024
awarded faculty teaching award by the Graduate Student Council in 2020

CS 163: Machine Learning Projects, Caltech   Fall 2020, 2021, 2022, 2023, 2024

Teaching Assistant
6.098/6.882: Computational Photography, MIT   Spring 2015

Academic Service

Committee, IEEE Computational Imaging Technical Committee, 2018-Present

Committee, Committee to Assess a Caltech Initiative on the Computing and Information Sciences and Computing in Science, 2024

Committee, DARPA Information Science and Technology (ISAT) Study Group, 2022 - 2024

Committee, Caltech CMS Department Committee on Diversity, Inclusion, and Equity 2020-2022 (co-chair in 2022)

Committee, Caltech Center for Autonomous Systems and Technology, 2019-2022

Committee, Caltech Resnick Center for Remote Sensing, 2020-2021

Committee, JPL's Scientific Understanding for Data Science (SUDS) Council, 2020-2022

Committee, Caltech CMS Faculty Search Committee, 2019-2021

Committee, Event Horizon Telescope Director Search & Selection Committee, 2019-2020

Organizer, Caltech AI in Astronomy Day, 2024

Organizer, CVPR's CV4Science Workshop, 2024

Organizer, ISAT Air Traffic Omniscience (ATO) Workshop, 2024

Organizer, Program Chair for the International Conference on Computational Photography (ICCP) 2022

Organizer, Event Horizon Telescope Imaging Working Group Coordinator, 2019-2024

Organizer, next-generation Event Horizon Telescope Algorithms and Inference Working Group

Coordinator, 2021-Present

Organizer, Grundfest Memorial Lecture Series

Organizer, Blending Physics and Learning for Computational Imaging at Asilomar 2021

Organizer, SPACE West Webinar Lecture Series 2021

Organizer, CVPR's Computational Cameras and Displays, 2020. Seattle, WA

Organizer, KISS Study on "Beyond Interstellar: Extracting Science from Black Hole Images," 2019. Pasadena, CA

Organizer, CVPR's Computational Cameras and Displays, 2019. Long Beach, CA

Organizer, Event Horizon Telescope Imaging Workshop, August, 2018. Cambridge, MA.

Organizer, Event Horizon Telescope Imaging Workshop, November, 2017. Cambridge, MA.

Organizer, ICCV's Extreme Imaging Workshop, 2015. Santiago, Chile

Organizer, Computer Vision Meetings at MIT, 2015-2017

Organizing Committee, The Event Horizon Telescope Imaging Workshop, 2020

Organizing Committee, Space VLBI Meeting, 2020

Organizing Committee, The Event Horizon Telescope Collaboration Meeting, 2019

Organizing Committee, Polarization Workshop for the Event Horizon Telescope, 2019

Organizing Committee, Finance Chair for International Conference on Computational Photography (ICCP), May, 2020. St. Louis, MO.

Organizing Committee, Program Chair for OSA Computational Optical Sensing and Imaging (COSI), 2019, 2020, 2021

Organizing Committee, Program Chair OSA Mathematics in Imaging, 2019

Organizing Committee, Poster/Demo Chair for International Conference on Computational Photography (ICCP), May, 2017. Stanford, CA.

Area Chair, European Conference on Computer Vision (ECCV), 2022, 2024

Area Chair, International Conference on Computer Vision (ICCV), 2021

Area Chair, Computer Vision and Pattern Recognition (CVPR), 2021

Area Chair, The British Machine Vision (BMVC), 2020

Area Chair, International Conference on Image Processing (ICIP), 2019, 2020, 2021

Area Chair, International Conference on Acoustics Speech and Signal Processing (ICASSP), 2020, 2021

Reviewer, Nature Astronomy, Nature Communications, IEEE Transactions on Computational Imaging, CVPR, ECCV, ICCV, ICCP, ICASSP, Advances in Space Research, IEEE Transactions on Visualization and Computer Graphics (TVCG), Transactions on Applied Perception, Optics Express, SPIE Optical Engineering, SIGGRAPH, Eurographics

RESEARCH GRANTS *Computational Imaging* - Amazon

Revealing the 3D Cosmic Web through Physics Constrained Neural Networks - Stanback Space Innovation Fund

Alfred P. Sloan Research Fellowship - Alfred P. Sloan Foundation

Designing Optimized Sensing Strategies to Reduce Uncertainty in General Imaging Paradigms - Caltech's Center for Sensing to Intelligence

NeRF for Science - Google

Co-Designing Sensing with Physics Constrained Neural Fields for 3D Imaging - Caltech's Center for

Sensing to Intelligence

Revealing the 3D Cosmic Web through Physics Constrained Neural Networks - Carver Mead New Adventures Funds

Interpretable Decision Making for Optimal Sensing, Imaging and Inverse Design - Rockley

Amazon Discovery Fund - Amazon

A Probabilistic Framework for Robust Neural Inversion in an Evolving BMI System - The Chen Institute for Neuroscience

Safety Critical Control with Computer Vision in the Loop - AeroViroment

Invertible Deep Generative Models for Seismological Inverse Problems - Caltech's Guthart Research Fund

Heritage Medical Investigator Appointment - Heritage Medical Research Institute

PDRDF: Blending Physics and Machine Learning for Estimation in Poorly-Characterized Inverse Imaging Systems - JPL (NASA)

Co-Optimized Sensing and Reconstruction for Next-Generation Computational Cameras - The Rose Hills Foundation

A Computational Microscope for Scientific Signatures - Carver Mead New Adventures Fund

The Radio Camera Initiative - Schmidt Futures

Improved Source Inversions with Machine Learning - Luke Wang and Yi Li

CAREER: Co-Optimized Sensing and Reconstruction for Next-Generation Computational Cameras - National Science Foundation

Computational Cameras - Innovation in Education Fund

AI Meets Real-World Science: Optimal Sensing for Next-Generation Imaging - The Okawa Foundation

The Event Horizon Telescope: Resolving Black Holes in Time and Space - National Science Foundation

Seeing the Wind: Visual Wind Speed Prediction using Machine Learning - Caltech CAST

Beyond Limits Vision-based Autonomous Inspection - BP

Learning Accelerated Optimization of Inverse Problems - Beyond Limits

Landslide early warning via UAV-born observation data and physics-based modeling - Caltech CAST

Mid-scale RI-1 (M1:DP): Next Generation Event Horizon Telescope Design - National Science Foundation

GitHub Gift - GitHub

PATENTS   K. Ni, K.L. Bouman, and N. Bliss. "Sparse Class Representation with Linear Programming". MIT12-01(15271L). 2012.