Manwei Chan

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Education

Massachusetts Institute of Technology (MIT) — Cambridge, MA (2017-Present)

Master's Degree in Aerospace Engineering (Expected graduation: 2019). Draper Fellow.
Thesis Topic: Guidance Algorithm for Docking with a Tumbling Satellite in GEO

The Johns Hopkins University — Baltimore, MD (2012-2016)

Master's in Physics, Bachelor's of Science in Physics and Math (Double Major). Masters and Bachelors done concurrently.
GPA: 3.92 (Dean's List, Phi Beta Kappa, Departmental Honors).

Phillips Academy Andover (Cum Laude Society) — Andover, MA (2011)

Research Experience

Robotic Servicing of Geosynchronous Satellites (RSGS) — Cambridge, MA (2017-present)

Draper Fellow working in Guidance Navigation and Control

- Creating guidance algorithm for rendezvous and proximity operations in the case of an uncontrolled tumbling satellite. Algorithm tested using linear covariance analysis and implementation in a high-fidelity simulation.
- Simulated satellite co-location strategies in GEO. Model utilized natural and station-keeping perturbations to run Monte Carlos.
- Analyzed rendezvous trajectories to determine feasibility and agreement with mission requirements given co-located satellites.

Cosmology Large Angular Sky Surveyor — Baltimore, MD and San Pedro de Atacama, Chile (2013-2017)

Senior Research Technician for telescope studying the gravitational waves possibly created during inflation

- Maintained and improved telescope functionality and operation while deployed in San Pedro de Atacama, Chile. Tasks included fixing diesel generators and implementation of structural supports to change resonant frequency of telescope mount. Performed experiments to determine optical properties of telescope/mount system.
- Installed thermometry and detector wiring in cryostat. In charge of cooldown and preparation of cryostat for deployment.
- Analyzed data from Fourier Transform Spectrometer to determine effectiveness of materials used for the telescope lens.

KWISP (Subatomic Particle Detection Laboratory) at CERN — Geneva, Switzerland (2015)

Research assistant in building detector studying hypothetical chameleon particles

- Determined beam parameters of a 532nm laser to optimize experiment efficiency.

Johns Hopkins Applied Physics Laboratory — Laurel, MD (2014)

Technical Aide

- Simulated sonar propagation in Atlantic and Pacific Oceans using the CASS software in conjunction with sperm whale movements generated using the 3MB software to determine interference generated by whale echolocation.

Extracurricular Experience

SEDS (Students for the Exploration and Development of Space) — Cambridge (2017-Present)

President

- Lead space tug satellite design team, which came in second in an international satellite design competition.
- Lead business team, which came in second place in a national pitch competition judged by current space entrepreneurs.
- Run MIT Space Seminar, which brings speakers from various space related disciplines to MIT.
- Other projects: mentoring high school students in satellite engineering, building a cubesat, and a neutral buoyancy lab.

SPACE Observatory — San Pedro de Atacama, Chile (2016-2017)

Astronomy Tour Guide

- Conducted astronomy tours for tourists from all over the world to explain the beauty of our night sky.

JHU Outdoor Pursuits — Baltimore, MD (2012-2016)

Financial Director, Trip Leader, Wilderness First Responder Certified (WFR)

- Lead 8-12 participants on canoeing and whitewater kayaking trips in Pennsylvania, Maryland, and West Virginia.

Skills

Conversationally proficient in French, Mandarin, Cantonese. Intermediate Spanish. WFR. HAM Radio Technician.
Programming: Python, Matlab, Root (C++ based), Mathematica, UNIX environment, R, SQL, HTML, CSS

Publications

Manwei Chan, “Statistical Simulation of Whale Vocalizations with Application to Sonar,”JHU/APL Technical Memorandum (FPS-T-14-0338), July 31, 2014.

Harrington, Kathleen; Marriage, Tobias; Ali, Aamir; Appel, John W.; Bennett, Charles L.; Boone, Fletcher; Brewer, Michael; Chan, Manwei; Chuss, David T.; Colazo, Felipe; Dahal, Sumit; Denis, Kevin; Dünner, Rolando; Eimer, Joseph; Essinger-Hileman, Thomas; Fluxa, Pedro; Halpern, Mark; Hilton, Gene; Hinshaw, Gary F.; Hubmayr, Johannes; Iuliano, Jeffery; Karakla, John; McMahon, Jeff; Miller, Nathan T.; Moseley, Samuel H.; Palma, Gonzalo; Parker, Lucas; Petroff, Matthew; Pradenas, Bastián; Rostem, Karwan; Sagliocca, Marco; Valle, Deniz; Watts, Duncan; Wollack, Edward; Xu, Zhilei; Zeng, Lingzhen. “The Cosmology Large Angle Scale Surveyor,”
Proceedings of the SPIE, Volume 9914, Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy VIII, pp. 99141K (2016).

Appel, John W.; Ali, Aamir; Amiri, Mandana; Araujo, Derek; Bennet, Charles L.; Boone, Fletcher; Chan, Manwei; Cho, Hsiao-Mei; Chuss, David T.; Colazo, Felipe; Crowe, Erik; Denis, Kevin; Dünner, Rolando; Eimer, Joseph; Essinger-Hileman, Thomas; Gothe, Dominik; Halpern, Mark; Harrington, Kathleen; Hilton, Gene; Hinshaw, Gary F.; Huang, Caroline; Irwin, Kent; Jones, Glenn; Karakula, John; Kogut, Alan J.; Larson, David; Limon, Michele; Lowry, Lindsay; Marriage, Tobias; Mehrle, Nicholas; Miller, Amber D.; Miller, Nathan; Moseley, Samuel H.; Novak, Giles; Reintsema, Carl; Rostem, Karwan; Stevenson, Thomas; Towner, Deborah; U-Yen, Kongpop; Wagner, Emily; Watts, Duncan; Wollack, Edward; Xu, Zhilei; Zeng, Lingzhen. “The Cosmology Large Angular Scale Surveyor (CLASS): 38 Ghz detector array of bolometric parameters.” Proceedings of the SPIE, Volume 9153, id. 91531J 15 pp. (2014).

Essinger-Hileman, Thomas; Ali, Aamir; Amiri, Mandana; Appel, John W.; Araujo, Derek; Bennett, Charles L.; Boone, Fletcher; Chan, Manwei; Cho, Hsiao-Mei; Chuss, David T.; Colazo, Felipe; Crowe, Erik; Denis, Kevin; Dünner, Rolando; Eimer, Joseph; Gothe, Dominik; Halpern, Mark; Harrington, Kathleen; Hilton, Gene C.; Hinshaw, Gary F.; Huang, Caroline; Irwin, Kent; Jones, Glenn; Karakla, John; Kogut, Alan J.; Larson, David; Limon, Michele; Lowry, Lindsay; Marriage, Tobias; Mehrle, Nicholas; Miller, Amber D.; Miller, Nathan; Moseley, Samuel H.; Novak, Giles; Reintsema, Carl; Rostem, Karwan; Stevenson, Thomas; Towner, Deborah; U-Yen, Kongpop; Wagner, Emily; Watts, Duncan; Wollack, Edward J.; Xu, Zhilei; Zeng, Lingzhen. “CLASS: the cosmology arge angular scale surveyor”. Proceedings of the SPIE, Volume 9153, id. 91531I 23 pp. (2014).

Sumit Dahal, Aamir Ali, John W. Appel, Thomas Essinger-Hileman, Charles Bennett, Michael Brewer, Ricardo Bustos, Manwei Chan, David T. Chuss, Joseph Cleary, Felipe Colazo, Jullianna Couto, Kevin Denis, Rolando Dünner, Joseph Eimer, Trevor Engelhoven, Pedro Fluxa, Mark Halpern, Kathleen Harrington, Kyle Helson, Gene Hilton, Gary Hinshaw, Johannes Hubmayr, Jeffery Iuliano, John Karakla, Tobias Marriage, Jeffrey McMahon, Nathan Miller, Carolina Nuñez, Ivan Padilla, Gonzalo Palma, Lucas Parker, Matthew Petroff, Bastian Pradenas, Rodrigo Reeves, Carl Reintsema, Karwan Rostem, Marco Sagliocca, Kongpop U-Yen, Deniz Valle, Bingjie Wang, Qinan Wang, Duncan Watts, Janet Weiland, Edward Wollack, Zhilei Xu,

Zi'ang Yan, Lingzhen Zeng, "Design and characterization of the Cosmology Large Angular Scale Surveyor (CLASS) 93 GHz focal plane," Proc. SPIE 10708, Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy IX, 107081Y (9 July 2018);

Kathleen Harrington, Joseph Eimer, David T. Chuss, Matthew Petroff, Joseph Cleary, Martin DeGeorge, Theodore W. Grunberg, Aamir Ali, John W. Appel, Charles L. Bennett, Michael Brewer, Ricardo Bustos, Manwei Chan, Jullianna Couto, Sumit Dahal, Kevin Denis, Rolando Dünner, Thomas Essinger-Hileman, Pedro Fluxa, Mark Halpern, Gene Hilton, Gary F. Hinshaw, Johannes Hubmayr, Jeffrey Iuliano, John Karakla, Tobias Marriage, Jeffrey McMahon, Nathan J. Miller, Carolina Nuñez, Ivan L. Padilla, Gonzalo Palma, Lucas Parker, Bastian Pradenas Marquez, Rodrigo Reeves, Carl Reintsema, Karwan Rostem, Deniz Augusto Nunes Valle, Trevor Van Engelhoven, Bingjie Wang, Qinan Wang, Duncan Watts, Janet Weiland, Edward Wollack, Zhilei Xu, Ziang Yan, Lingzhen Zeng. “Variable-delay Polarization Modulators for the CLASS Telescopes” Proceedings of the SPIE: Instrumentation and Methods for Astrophysics (2018).