Xin Cindy Yee
Assistant Professor
University of Colorado Colorado Springs

+1-510-705-2838
xyee@uccs.edu

Education

•California Institute of Technology *2015*
Mechanical and Civil Engineering Degree: PhD

•California Institute of Technology *2010*
Mechanical and Civil Engineering Degree: MS

•Massachusetts Institute of Technology *2009*
Mechanical Engineering Degree: BS

Professional Experience

•University of Colorado Colorado Springs *01/10/2017 - Present*
Assistant Professor (full time) Colorado Springs, CO
– Teach courses in mechanical and aerospace engineering to graduate and undergraduate students
– Research in data-driven modeling, machine learning of nonlinear systems in engineering

•Army Research Laboratory *04/15/2015-12/31/2016*
Postdoctoral Scholar (full time) Aberdeen Proving Ground, MD
– Develop new numerical methods to efficiently solve density functional theory equations.

•California Institute of Technology *05/15/2010-01/05/2015*
Graduate Research Assistant (full time) Pasadena, CA
– Proof of convergence for Linear scaling algorithms used for density functional theory.

•National Innovation Foundation *06/15/2009-08/15/2009*
Summer Intern (full time) Manipur, India
– Helped rural grass-root innovators in India improve their mechanical devices .

•Indian Institute of Technology, Kanpur *06/01/2008-08/15/2008*
Summer Research Intern (full time) Kanpur, India
– Conduct numerical modeling research.

•Ecole Polytechnique *06/01/2007-08/15/2007*
Summer Research Intern (full time) Paris, France
– Conduct experimental research on microfluidic devices.

•Massachusetts Institute of Technology *06/01/2006-08/15/2006*
Summer Research Intern (full time) Cambridge, MA
– Conduct computational research on carbon nano-tubes.

•YMCA summer camp *06/01/2005-08/15/2005*
Teaching Intern (part time) Oakland, CA
– Assist in classroom teaching for middle school student programs.

Recent Refereed Publications

Tallerday, T., Lundberg, E., Brown, G. W., McCollum, J., **Yee, X. C.**, "Machine Learning Techniques to Assess Rheological Similarity in Fluorinated Thermoplastics", ACS Applied Polymers, submitted, 2025.
Pushkar, N., **Yee, X. C.**, McCollum, J., Runnels, B., "Inverse model for determining general molecular weight distribution from polymer rheology", Journal of Rheologoy, submitted, 2025.
Gibson, A. J., **Yee, X. C.**, Calvisi, M. L., " KLQR control of an EMB|Koopman linear quadratic regulator control of acoustically-driven encapsulated microbubble ", submitted Journal of Acoustical Society of America, 2025.
Gibson, A. J., **Yee, X. C.**, Calvisi, M. L., " Data-driven acoustic control of a spherical bubble using a Koopman linear quadratic regulator ", Journal of Acoustical Society of America, 2024.
A. J. Gibson, M. L. Calvisi, **X. C. Yee**, "Koopman linear quadratic regulator using complex eigenfunctions for nonlinear dynamical systems", SIAM Applied Dynamical Systems, 21(4):2463-2486, (2022)
M. Meier, J. D. Kittle, **X. C. Yee**, "Supervised dimension reduction for optical vapor sensing", Royal Society of Chemistry Advances, 12 9579-9586 (2022)
H. Pascual-Herrero, **X. C. Yee**, "Least squares principal component analysis: a supervised dimension reduction method", Numerical Linear Algebra with Applications, (2021)
P.C. Vilalta, S. Sheikholeslami, K. Saleme Ruiz, **X. C. Yee**, and M. Koslowski, "Machine Learning for Predicting the Critical Yield Stress of High Entropy Alloys." ASME. J. Eng. Mater. Technol. 143(2) (2021)
A. Breuer, **X, Wang**, "More robust Chebyshev filtering for SCF iteration, with applications to real-space DFT", Journal of computational physics, 374(0021-9991) (2018)
M. Lee, K. Leiter, C. Eisner, A. Breuer, **X. Wang**, "A robust variant of block Jacobi-Davidson for ex-tracting a large number of eigenpairs: Application to grid-based real-space density functional theory", Journal of Chemical Physics, 147(11) (2017)

Recent Conference Proceedings

Yee, X. C., Dao, P. D., Strong, D. M., Wetter, C. J., Roth, B., Chun, F. K., "Machine learning classification GEOs using spectral data", AMOS conference proceedings, 2023.
Dao, P. D., **Yee, X. C.**, Strong, D. M., Wetter, C. J., Roth, B., Chun, F. K., "Multi-Geosynchronous Satellite Classification With Spectroscopic Signatures" AMOS conference proceedings, 2023.
Whitley, R., Shumway, N., Fagley, C., **Yee, X. C.** "Analysis of the RAFT Neural Network for Particle Image Velocimetry: Noise, Laser Sheet Effects, and Object Occlusion", AIAA Scitech, 2026.
Patel, S., Tyron, T., **Yee, X. C.**, Runnels, B., Quilan, J. M. "Diffuse Interface Model with Surface Tension for Modeling Wave–Droplet Interactions in Compressible Two-Phase Flows", AIAA Scitech, 2026.

Presentations at Meetings and Seminars Presented

Tallerday, T., Lundberg, E., Brown, G., McCollum, J., and **Yee, X. C.**, Fluoropolymers "Machine Learning Techniques to Assess Rheological Similarity in Fluorinated Thermoplastics ," (June, 2025).
Gibson, A., **Yee, X. C.**, SIAM conference on applications of dynamical systems "Acoustic Control of Nonspherical Shape Oscillations in Bubbles using Koopman LQR," (June, 2025).
Gibson, A., **Yee, X. C.**, Dynamic Days "Acoustic Control of Nonspherical Shape Oscillations in Bubbles using Koopman LQR," (January, 2025).
Gibson, A., **Yee, X. C.**, Calvisi, M.,"Acoustic Control of Microbubble Oscillations Using a Koopman Linear Quadratic Regulator", Seminar at Arizona State University, Feb, 2025.
Gibson, A., **Yee, X. C.**, Calvisi, M., SIAM conference on applications of dynamical systems "Acoustic Control of Microbubble Oscillations Using a Koopman Linear Quadratic Regulator," (June, 2023).
Gibson, A., **Yee, X. C.**, Calvisi, M., APS Division of Fluid Dynamics, "Application of Koopman LQR to the control of nonlinear bubble dynamics Presentation," APS. (November 21, 2021).
Gibson, A., **Yee, X. C.**, , Calvisi, M., Mountain Lion Research Day, "Koopman Analysis and Control of Nonlinear Bubble Dynamics," UCCS. (October 15, 2021).
Gibson, A., **Yee, X. C.**, Calvisi, M., Rocky Mountain Fluid Mechanics Conference, "Application of Koopman LQR to the control of nonlinear bubble dynamics." (August 10, 2021).
Gibson, A.,Yee, X. C., Calvisi, M., Cavitation2021, "Koopman Analysis And Control Of Nonlinear Bubble Dynamics." (May 10, 2021).
Gibson, A., **Yee, X. C.**, Calvisi, M., SIAM Front Range Student Conference, "Koopman Analysis and Control of Nonlinear Bubble Dynamics." (March 13, 2021).
Yee, X. C., Gibson, A., Calvisi, M., SIAM Computational Science and Engineering, "Data driven modeling and control for biomedical applications," SIAM, Virtual. (March 1, 2021).
Gibson, A. J., **Yee, X. C.**, Calvisi, M. L., 73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics, "Application of Koopman theory and dynamic mode decomposition to the analysis of nonlinear bubble dynamics," American Physical Society - Division of Fluid Dynamics, Virtual. (November 23, 2020).
Pascual Herrero, H., **Yee, X. C.**, Carnegie Melon University Applied Mathematics Seminear, "Least-squares regression principal component analysis," Carnegie Melon University. (November 17, 2020).
Pascual Herrero, H., **Yee, X. C.**, University of California, Santa Cruz, Applied Mathematics Seminear, "Least-squares regression principal component analysis," University of California, Santa Cruz. (October 5, 2020).
Pascual Herrero, H., **Yee, X. C.**, SIAM Annual Conference, "Least-squares regression principal component analysis," SIAM, Remote. (July 16, 2020).
Yee, X. C., Leiter, Borodin, O., Knap, J., International Congress on Industry and Applied Mathematics, "Multi-Fidelity Gaussian Process Surrogate for Electrolyte Chemical Stability," University of Valencia, Valencia, Spain. (July 15, 2019).
Yee, X. C., Leiter, K., , Breuer, A., Lee, M., Knap, J., Borodin, O., "Lanczos subspace filter for density functional theory and multi-fidelity surrogate modeling," University of Navada, Reno, Reno, Navada. (November 8, 2018).
Yee, X. C., Saleme, K., Duo, S., Sheikholeslami, S., Koslowski, M., Women in Mathematics of Materials Workshop, "Machine learning for predicting mechanical response of polycrystals," Michigan Center for Applied and Interdisciplinary Mathematics, Ann Arbor, Michigan. (May 14, 2018).
Yee, X. C., Leiter, K., Breuer, A., Lee, M., Knap, J., Borodin, O.,"subspace filter for density functional theory and multi-fidelity surrogate modeling," Colorado School of Mines, Golden, CO. (April 10, 2018).
Yee, X. C., Lee, M., Knap, J., , 14th U.S.National Congress on Computational Mechanics, "Spectrum Slicing Using Chebyshev Polynomials," Montreal, Canada. (July 20, 2017).

Grants and Awards

a. **Yee, X. C. (PI)**, 2030STEMxBWF Fellowship, Sponsored by 2030 STEM, $10,000., (Jan 2026-Dec 2027), pending.
Yee, X. C. (PI), "Koopman operator framework for analysis of resilience in Dutch Marines undergoing intensive training," Sponsored by DARPA, Federal, $179,104.00., (Jan 2026-Dec 2027), pending.
Yee, X. C. (PI), "CAREER: Identification of Exceptional Points using Koopman Operator Framework, with Application to Coupled Oscillators and Elastodynamics," Sponsored by NSF, Federal, $625,129., (Jan 2026-Dec 2031), pending.
McCollum, J. (PI), **Yee, X. C. (Co-PI)**, Runnels, B. (Co-PI), "Synthesis-Structure-Property Relationships of Fluorinated Binder Systems," sponsored by Los Alamos National Laboratory, Federal, pending, $662,240.00. (October 1, 2025 - September 30, 2027), pending.

Yee, X. (PI), Quilan, J. (Co-PI), "CDS&E: Data-enabled closed-loop Koopman control of encapsulated microbubbles", sponsored by National Science Foundation, $398,813. (July 15, 2024 - June 30, 2027), funded.
McCollum, J. (PI), **Yee, X. C. (Co-PI)**, Runnels, B. (Co-PI), "Synthesis-Structure-Property Relationships of Fluorinated Binder Systems," funded, sponsored by Los Alamos National Laboratory, Federal, $551,253.00. (October 1, 2023 - September 30, 2025), funded.
Yee, X. C, UCCS College of Engineering and Applied Sciences 2023-2024 Teacher of the Year Tenure Track Award.
Yee, X. C (PI)., "Air Force Laboratory summer faculty fellowship program," Sponsored by US Air force, Federal, $15,450.00. (May 26, 2024 - August 3, 2024), funded.
Yee, X. C (PI)., "Air Force Laboratory summer faculty fellowship program," Sponsored by US Air force, Federal, $18,540.00. (May 22, 2023 - August 13, 2023), funded.
Runnels, B. (PI), Quinlan, J. M. (Co-PI), Morgenstern, A. (Co-PI), Lee, B. K. (Co- PI), Yi, Q. (Co-PI), Bredbenner, T. (Supporting), Wan, H. (Supporting), Calvisi, M. (Supporting), Plett, G. L. (Supporting), **Yee, X. C. (Supporting)**, "MRI: Acquisition of a high performance computing cluster for next-generation computational science in Southern Colorado," Sponsored by NSF, Federal, $621,754.00. (August 1, 2020 - July 31, 2025), funded.
Yee, X. C (PI)., "Air Force Laboratory summer faculty fellowship program," Sponsored by US Air force, Federal, $18,540.00. (Funded: May 16, 2022 - August 5, 2022), funded.
Yee, X. C. (PI), "UCCS Center for Research and Creative Work Seed Grant," Sponsored by UCCS Office of Research, University of Colorado Colorado Springs, $7,500.00. (May 1, 2020 - May 1, 2021), funded.
Wang, X. (PI), "Summer Faculty Fellowship," Sponsored by Army Research Laboratory, Federal, $14,969.00. (June 25, 2018 - August 5, 2018), funded.
Yee, X. C.(PI), "Committee on Research and Creative Works Seed Grant," Sponsored by Committee on Research and Creative Works, University of Colorado Colorado Springs, $7,500.00. (July 1, 2017 - June 30, 2018), funded.
Yee, X. C. (PI), "Summer Research Scientist," Sponsored by Army Research Laboratory, Federal, $9,000.00. (May 22, 2017 - July 22, 2017), funded.

b. **Yee, X. C.(PI)**, "Committee on Research and Creative Works Seed Grant," Sponsored by Committee on Research and Creative Works, University of Colorado Colorado Springs, $7,500.00. (July 1, 2024 - June 30, 2025), not funded.
Yee, X. C. (PI), "CAREER: data-driven modeling and control of multiple time-scale problems using Koopman operator theory," Sponsored by NSF, Federal, $525,424.00., not funded.
Yee, X. C.(PI), Seed Grant, Sponsored by the Lyda Hill Institute for Human Resilience, University of Colorado Colorado Springs, $2,100.00. (July 1, 2023 - June 30, 2024), not funded.
Calvisi, M. (PI), **Yee, X. C. (Co-PI)**, Wan, H. (Supporting), Stevens, J. (Supporting), Quinlan, J. M. (Supporting), “REU-Site: Research Experiences in Thermal-Fluid Sciences", Sponsored by NSF, Federal, $461,752, (Submitted: 2023), not funded.
Calvisi, M. L. (PI), **Yee, X. C. (Co-PI)**, Wan, H. (Supporting), Runnels, B. (Supporting), Stevens, J. (Supporting), Quinlan, J. M. (Supporting), "REU Site: Computational Methods in Thermal- Fluid Sciences," Sponsored by National Science Foundation, Federal, $418,459.00. (Submitted: September 6, 2022), not funded.
Yee, X. C.(PI), "CAREER: Multi-fidelity framework for data-driven Koopman operator approximation," Sponsored by NSF, Federal, $433,215.00. (Submitted: July 26, 2022), not funded.
Yee, X. C. (PI), Calvisi, M. (Co-PI), "Data-driven modeling and control of encapsulated microbubbles using Koopman operator theory," Sponsored by NSF, Federal, $320,907.00. (Submitted: February 18, 2022), not funded.
Runnels, B. (PI), Yee, X. C. (Co-PI), "Enhancing the Performance of Scientific Applications Through Intelligent Advices," Sponsored by Crestone Computing LLC/NSF SBIR PHASE II, Federal, $59,670.00. (Submitted: August 31, 2019), not funded.
Stevens, J. W. (Co-PI), Wan, H. (I), Bredbenner, T. (Co-PI), **Yee, X. C. (Co-PI)**, Plett, G. L. (Co-PI), George, L. E. (Supporting),"NRT-HDR: A Digital Platform for Thermal and Power Management Systems: Modeling, Monitoring, and Fault Detection," Sponsored by NSF, Federal. (Submitted: January 31, 2020), not funded.
Yee, X. C.(PI), "NSF LEAPS NPS," Sponsored by NSF, Federal, $248,965.00. (Submitted: June 14, 2021), not funded.
Kalita, J. K. (PI), Calvisi, M. L. (Co-PI), Semiari, O. (Co-PI), Spendier, K. (Co- PI), Cascaval, R. C. (Co-PI), Lee, B. K. (Supporting), **Yee, X. C. (Supporting)**, Pinchuk, A. O. (Supporting), Atyabi, A. (Supporting), Carpenter, D. M., "NRT-HDR: Machine Learning for Computational Science and Engineering," Sponsored by National Science Foundation, Federal, $2,993,716.00. (Submitted: February 25, 2021), not funded.
Yee, X. C. (PI), "Dreyfus program for machine learning in the chemical sciences and engineering," Sponsored by Dreyfus Foundation, Private Gift, $96,584.00. (Submitted: April 1, 2020), not funded.

Courses Taught

Machine Learning for Engineers.
Introduction to Finite element methods, undergraduate and graduate level.
Engineering Analysis I, graduate level.
Engineering Analysis II, graduate level.
Continuum mechanics, graduate level.
Modeling and simulation of dynamical systems, undergraduate level.
Mechanics of materials, undergraduate level.
Statics, undergraduate level.
Introduction to structured programming, undergraduate level.

Professional Organizations

Society for Chaos theory in psychology and life sciences, 2025.
Society for industrial and applied mathematics, 2017 - present.
American Physical Society, 2020.
Association of women in mathematics, 2020.

Service

- **UCCS Excellence in Leadership Program,** participant *2025-2026*
- **Mechanical and Aerospace Department Graduate Committee,** Chair *Fall 2025 - Present*
- **Mechanical and Aerospace Department Graduate Committee,** Committee member *2017 - Present*
- **Mechanical and Aerospace Department Tenure-track search Committee,** Committee member *2017, 2019, 2023*
- **Mechanical and Aerospace Department Solids Quals Committee,** Committee member *2019, 2021, 2022*
- **Faculty Equity and Inclusion Committee,** College of Engineering Representative *2022 - Present*
- **Soceity of Women Engineers,** Faculty Advisor *2021 - Present*
- **Association of Women in Mathematics,** Mentor *2021 - Present*
- **Society of Women Engineers,** Faculty Advisor *2021 - Present*
- **IEEE Transactions on Neural Networks and Learning** Reviewer *2022*
- **American Chemical Society: Petroleum research fund** Reviewer *2019*
- **National Science Foundation DMREF program** Reviewer *2025*
- **SIAM Conference on applied dynamical systems** Mini symposium organizer *2023, 2025*
- **SIAM Conference on computational science and engineering** Mini symposium organizer *2021*
- **Mach Conference** Mini symposium organizer *2018*