Curriculum Vitae

Jean R. Hertzberg

Professor
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Education

Ph. D., Mechanical Engineering, University of California, Berkeley, December 1986.

M. S., Mechanical Engineering, University of California, Berkeley, June 1983.

B. S. E., Mechanical Engineering, University of Michigan, Ann Arbor, Magna Cum Laude May 1981.

Professional Experience

Professor May 2022 - present	Department of Mechanical Engineering University of Colorado, Boulder
Associate Professor May 1997 – May 2022	Department of Mechanical Engineering University of Colorado, Boulder
Assistant Professor Jan. 1991 - May 1997	Department of Mechanical Engineering University of Colorado, Boulder
Research Associate Jan. 1987- Dec. 1990	Aerospace Engineering Department University of Southern California
Research Assistant Oct. 1981- Dec. 1986	Turbulent Combustion Group Lawrence Berkeley Laboratory
Research Assistant May 1981- Oct. 1981	Wood Combustion Studies University of Washington, Seattle
Research Assistant May 1980- Aug. 1980	Heat Transfer Laboratory University of Michigan, Ann Arbor

Junior Engineer	Assembly Engineering Dept.
May 1979- Aug. 1979	Metal Stamping Division
	Ford Motor Company, Dearborn, MI

Professional Activities and Service

Service to Journals

Regional Editor for North America, Journal of Flow Control, Measurement and Visualization, 2012 - present

Service to Scholarly or Professional Organizations

APS

Local Organizing Committee Co-Chair, American Physical Society, Division of Fluid Dynamics Annual Meeting November 2017, Denver, CO.

Program Committee Member, American Physical Society, Division of Fluid Dynamics, starting November 2017 - 2020

Chair, Education and Career Outreach Committee, American Physical Society , Division of Fluid Dynamics. 11/2012- 11/2013 (Vice Chair, 11/2011 – 11/2012, founding member 2010-2011).

Founder, Organizer and CoChair, Workshops on Fluids Education, American Physical Society, Division of Fluid Dynamics, Annual Meetings 2008, 2009, 2010, 2011.

Minisymposium Organizer and Chair: "Fluids Education", American Physical Society , Division of Fluid Dynamics, 59th Annual Meeting, Tampa Fl, 2006; "Fluids Demonstrations and Instructional Laboratories", American Physical Society , Division of Fluid Dynamics, 60th Annual Meeting, Salt Lake City, UT. Nov 18-20 2007; "Videos and Multimedia for Fluids Instruction", American Physical Society , Division of Fluid Dynamics, 61th Annual Meeting, San Antonio Texas. Nov 23-25, 2008

Executive Committee Member-at-Large, American Physical Society , Division of Fluid Dynamics. Elected to 3 year term, 2007 – 2010.

Publications and Media Committee, American Physical Society , Division of Fluid Dynamics. 2008.

Founded the Fluids Education Google group, made up of 250 international engineering academics, 12/2006.

Bioengineering

Founding Member, Colorado Alliance for Bioengineering (CAB), 1998-2001.

Organizer, Colorado State Fair Exhibit on Bioengineering, 2001.

Chair, CAB Day at Fitz. Organized Colorado Alliance for Bioengineering Day at Fitzsimons, a poster session that brought together over 150 members of the local

bioengineering community, including faculty, staff and students from CU Boulder, Colorado State U., Colorado School of Mines and UCHSC, as well as members of the Colorado Biotechnology Association and the Colorado Biomedical Device Association. Described in the Denver Post 12/6/2000 Business section.

Co-Chair, Fluids: Experimental Techniques Session, 11th International Conference on Mechanics in Medicine and Biology, Maui, HI, April 2-5, 2000.

Other

Advisory Board member of the Mobile Instructional Particle Image Velocimetry (mi-PIV) program at Utah State University. 2017-present

Advisory Board member for the STEM Faculty Institute (STEMFI) at Brigham Young University, an NSF funded grant that provides an intensive training experience on student-centered teaching strategies for faculty members. 2018-present

Founder and Moderator, Flow Visualization Facebook Group, 2008 to present. Currently at 821 members.

Participated in the Third Annual Women in Engineering Roundtable, sponsored by Graduating Engineer and Computer Careers Magazine. Described in the Feb. 2000 issue, pp 18 - 23.

Co-Chair, Work-In-Progress Poster Session, 27th Symposium (International) on Combustion, Boulder, CO 1998.

Member, Organizing Committee, 27th Symposium (International) on Combustion, Boulder, CO 1998.

Member, Organizing Committee, 15th International Colloquium on the Dynamics of Explosions and Reactive Systems, Boulder, CO, 1995.

Consultant, Science Review Panel, Microgravity Combustion Program, NASA Lewis, 1993.

Chair, Organizing Committee, Sixth Office of Naval Research Propulsion Meeting, Boulder, CO, 1993.

Member, Program Review Subcommittee, Combustion Institute, International Combustion Symposium, 1992, 1994, 1996, 1998, 2000.

Reviewer of papers, proposals and programs for:

Aerosol Science and Technology
Annals of Biomedical Engineering
Medical Engineering and Physics
Social Sciences and Humanities Research Council of Canada
PLOS ONE
Nature/Scientific Reports
Journal of Fluid Mechanics
Physics of Fluids
Experiments in Fluids
Journal of Visualization

BioMedCentral Public Health
International Journal of Heat and Fluid Flow
Combustion and Flame
Combustion Science and Technology
International Symposium on Combustion
AIAA Journal
Journal of Heat and Fluid Flow
Journal of Propulsion and Power
Journal of Fluids Engineering
ASME Journal of Energy Resources Technology
Office of Naval Research
Army Research Office
National Science Foundation
National Aeronautics and Space Administration

Membership:

American Physical Society
American Society for Engineering Education
American Association of University Women
American Association of University Professors
Tau Beta Pi
Pi Tau Sigma

Honors and Awards

2023 "Measurements and Simulations of Aerosol Released while Singing and Playing Wind Instruments", one of five winners of the ACS Environmental Au Best Paper Award 2021-2022.
2015 Best of DEED (Design in Engineering Education Division) Paper award (one of five), ASEE's 122nd Annual Conference and Exposition.
Katherine Goodman, Hunter Ewen, Jean Hertzberg, and Jiffer Harriman. "Aesthetics of Design: A Case Study: American Society for Engineering Education." Seattle, WA, United states, 2015. http://www.asee.org/public/conferences/56/papers/12312.
2015 ASEE 2015 Rocky Mountain Section Conference Best Presentation Award to Katherine Goodman for
Katherine Goodman, Jean Hertzberg, and John K Bennett. "Engineering Education as Transformative Experience: A Framework for Examining Course Success." presented at the ASEE 2015 Rocky Mountain Section Conference, Metropolitan State University of Denver, April 10, 2015. http://www.msudenver.edu/et/aseeconference2015/.
2010 Marinus Smith "Making a Difference" Teaching Excellence Award from the CU Boulder Parents Association.
2010 John and Mercedes Peebles Innovation in Education Award nominee (56 in CEAS).

2010 Ilya Lisenker, Jean Hertzberg, “Spinning on a Skillet.” Entry in the NSF/ Science Magazine 'International Science and Engineering Visualization Challenge'. Selected as a Finalist.
2008 Best Poster in Flow and Motion category, International Society for Magnetic Resonance in Medicine 2008 meeting.
2006, 2003 Winner, Gallery of Fluid Motion, American Physical Society Division of Fluid Dynamics Annual Meeting
2006 2nd place Combustion Art competition, Central States Section, Combustion Institute.
2006 Seven Flow Visualization course images accepted into the juried CU Art/Science exhibit
2004-2005 Mechanical Engineering Outstanding Service Award, CU Boulder
2004 New Inventor of the Year Award, CU Boulder
2004 Best Paper PIC III, ASEE Annual Meeting
1997 Honorary Member, Pi Tau Sigma, Mechanical Engineering Honor Society
1996 Associate Fellow, American Institute of Aeronautics and Astronautics
1991 National Science Foundation Research Initiation Award
1985 IBM Fellowship
1981,1982 Graduate Opportunity Fellowship, U.C. Berkeley
1979 Member of Tau Beta Pi, the National Engineering Honor Society
1976-1980 Dean's Honor List, University of Michigan
1979 Ford Fellowship
1976 Ford Freshman Scholarship
1976 Society of Women Engineers Award

Grants

“Interdisciplinary Research Themes (IRT): Synergizing Engineering Education with AI-Augmented Learning (SEAL)” CEAS CU Boulder. $125,000 annually for 2 years, August 2020 - July 2022. PIs: Angela Bielefeldt and Alessandro Roncone. Hertzberg: proposal co-author and Leadership Team member. Contribution 10%. Hertzberg sub award:$4000, May 2021 - May 2022.

“Aerosol Generation from Musician and Performers” International Coalition Performing Arts Aerosol Study via National Federation of State High School Associations. Miller PI, Hertzberg and Vance Co-PIs. $118,326. 2020/05 – 2021/06. Contribution 25%.

“Cardiovascular Mechanisms of Exercise Intolerance in Diabetes and the Role of Sex” subaward from CU Denver’s Veteran’s Administration Clinical Merit Award. 2017-2020. Hertzberg portion $5000 per year. Contribution 100%.

“Postdoctoral CIRTL Learning Communities” a subaward from the University of Wisconsin’s NSF IUSE grant, “Preparing Future Faculty to Improve STEM Education: Broadening the National Impact of the CIRTL Network” Hertzberg portion: $86,000. 9/1/2017 – 8/31/2021.

"Collaborating Locally and Nationally to Prepare Future STEM Faculty: A CU Boulder/CIRTL Alliance" Subaward from the University of Wisconsin's grant from the Great Lakes Higher Education Corporation. Hertzberg PI, Border Co-PI. September 1, 2015 – August 31, 2016. $86,000. Contribution 50%.

"The CIRTL Network: Local Learning Communities at CU Boulder" Subaward from the University of Wisconsin's NSF award "The CIRTL Network: 25 Research Universities Preparing a National Faculty to Advance STEM Undergraduate Learning" Hertzberg PI, Border Co-PI. 8/15/2013 – 7/31/2016, $160,125. Contribution 50%.

"The Power of Aesthetics" NSF RIGEE program. Hertzberg PI, Curran, Finkelstein, Ito Co-PIs. 01/01/2013 - 12/31/2014, $150,000. Contribution 75%.

"4 Dimensional Cardiac MRI for the Diagnosis and Assessment of Pulmonary Hypertension". Butcher Seed Grant. Fenster PI, Hertzberg CoPI. 06/01/2012 – 5/31/2014, $100,000. Contribution 50%.

"4 Dimensional Cardiac MRI for the Assessment of Disease Severity and Prognosis in Pulmonary Hypertension". National Jewish Health, Translational Research Initiative. Fenster PI, Hertzberg CoPI. 3/1/2012 – 2/28/2013. $51,844. Contribution 50%.

Analysis of 4DMRI Cardiac Flow Related to Pulmonary Hypertension. National Jewish Hospital, consulting basis. 6/4/11 – 6/3/2012. $2000. Hertzberg PI. Contribution 100%.

A MEMS Pulsed Injection Electrostatic Atomizer for Small Engines. Subcontract to CU Boulder on US Army Small Business Technology Transfer (STTR)Phase II contract with TDA Inc, Proposal A2-3696. Principal Investigator: John W. Daily $250,781. Duration: 09/01/09 - 08/31/11 Co-PI: Jean Hertzberg 25% time, 3 months Summer. Contribution 20%.

Experimental Investigation of Hospital Operating Room (OR) Air Distribution. Zhai PI, Hertzberg Co-PI, ASHRAE, 1.0 month summer, $140,685. 09/1/08 – 8/31/10. Contribution 50%.

Development of a micro- and macro- particle image velocimetry system for opaque flows. Shandas PI, Hertzberg CoPI. NSF. $526,268. 08/01/04 - 07/31/07. 10% AY, 0.5 month summer. Contribution 50%.

Real time ultrasound blood flow velocimetry. Shandas PI, Hertzberg Collaborator, NIH, 1.0 month AY. Total amount: $300,000 6/1/04 - 5/31/06. Contribution 50%.

Principal Investigator, "Acquisition of a Particle Image Velocimetry System," National Science Foundation, CTS 0114109, 11/1/2001-10/31/2003, $82,000. Contribution 95%.

Principal Investigator, "Modeling of Mitral Flow Data," Council on Research and Creative Work, CU Boulder, 2001, $4,800. Contribution 100%.

Collaborator, “Mechanics of pulmonary hypertension”, 6/01 – 5/05, National Institutes of Health $175,000. Contribution 30%.

Co-Investigator, “REU Supplement for ITR: An Interactive Experimental/Numerical Simulation System with Applications in MEMS Design” National Science Foundation, ACI-0083004, $30,000, 9/1/2001- 8/31/03. Contribution 50%.

Senior Researcher, “ITR/ACS: An Interactive Experimental/Numerical Simulation System with Applications in MEMS Design,” National Science Foundation, 2000-2003, $499,999. Contribution 30%.

Co-Investigator, “Fluid Mechanics of Ventricular Filling,” Whitaker Foundation, 1998-2001, $205,587. Contribution 50%.

Principal Investigator, NASA-NAG3-1616, “Three-Dimensional Flow in a Microgravity Diffusion Flame,” 1994-1998, $400,000. Contribution 100%.

Co-Investigator, “Imaging System for Propulsion Phenomena” Office of Naval Research, 1997-1998, $160,924. Contribution 90%.

Principal Investigator, ONR-N000149311305, “Combustion Control in Compact Waste Incinerators,” 1993-1996, $450,000. Contribution 50%.

Principal Investigator, ONR-N000149310118, “Combustion of High Energy Fuels,” 1992-1995, $404,432. Contribution 50%.

Principal Investigator, ONR-N000149311184, “AASERT Supplement: Optical Soot Diagnostics for High Energy Fuel Combustion,” 1993-1996, $123,787. Contribution 50%

Principal Investigator, NSF-CTS-9109778, “Research Initiation Award: Combustion in an Asymmetric Configuration,” 1991-1993, $70,000. Contribution 100%.

Principal Investigator, NSF-CTS-9109778-01, “Research Experience for Undergraduates Supplement: Combustion in an Asymmetric Configuration,” 1991-1993, $10,000. Contribution 100%.

Co-Investigator, NSF-CTS-9111746, “Engineering Research Equipment: Laser Doppler Velocimetry System for Combustion Research,” 1991-1992, $34,192. Contribution 90%.

Student Supervision

PhD

Abhishek Kumar, Flow Visualization of Jets from Musical Instruments, started Summer 2020. 100% advisee.

James McNeill. Co-advised 40% with John Zhai, CEAE. “Experimental and Computational Investigation of Surgical Environment Air Distribution.” PhD December 2, 2019.

Miles Abarr. Co-advised 50% with Lupita Montoya, CEAE. “Modeling Pumped Thermal Energy Storage with Waste Heat Harvesting.” Began Fall 2013, graduated May 2016. Currently with Bright Energy Storage Technologies.

James Browning. Co-advised 90% with Brett Fenster, NJHC. “Effects of Right Ventricular Diastolic Dysfunction on Coherent Flow Structures in the Human Right Atrium and Right Ventricle.” PhD, graduated May 2016. Currently Assistant Teaching Professor at Northeastern University College of Engineering.

Katherine Goodman. Co-advised 90% with John Bennett, Atlas Program. “The Transformative Experience in Engineering Education.” PhD Atlas program, started Fall 2013, graduated December 2015. Currently Assistant Professor and Associate Director, Inworks Program, University of Colorado, Denver.

Andrew Carter, Streaming Birefringence of Expanded Mica Colloid Suspension. PhD project Fall 2011 – Fall 2012

Natalie Ross. Co-advised 50% with Liz Bradley, CS. “Point-Vortex Modeling of a Forced Planar Jet,” PhD May 2008. Currently software engineer at Google.

Rui Wang, Co-advised 30% with Robin Shandas, MCEN. “Right Ventricular Assist Device for Fontan Patients: Pump Design, Fabrication and Assessment,” December 2007.

Lingli Liu. Co-advised 40% with Robin Shandas, MCEN. “Fabrication of Capacitative Micromachined Ultrasonic Transducers,” December 2007.

Hairong Zheng. Co-advised 40% with Robin Shandas, MCEN. “Effect of Ultrasonic Waveform on Nonlinear Microbubble Response”, May 2006.

Rick Luebs, “Cardiovascular Imaging,” PhD project Jan-Oct 2005.

John Carlton. 100% advised. “Three-Dimensional Flow in a Microgravity Diffusion Flame,” Ph.D. August 2004.

Craig Weinberg. Co-advised 50% with Robin Shandas, MCEN. “Noninvasive Measurement of Pulmonary Vascular Resistance in Pediatric Pumonary Hypertension,” Ph.D. May 2003

Kevin Anderson. 50% co-advised with Shankar Mahalingam. MCEN. “Simulation of Non-Premixed Actively Forced Reacting Vortical Structures Within a Confined Domain” Ph.D. May 1998.

Rom McGuffin Co-advised 50% with John Daily, MCEN. “Combustion Instability in a Ramjet,” Ph.D. December 1996.

Tae Chang, Co-advised 90% with Robert Keller, NCAR. “Interaction between an Asymmetric Vortex Ring and a Wall,” Ph.D. December 1994.

Masters

Vigneshwaran Selvaraju, “High Voltage Augmentation of Fuel Sprays” started Fall 2013, project completed May 2015.

Brett McQuillan “Synthetic Jets for Indoor Air Quality” M.S. thesis, Fall 2013. Co-advised 50% with Lupita Montoya.

Luis Loma “Flow in a Compliant Model Aorta,” M.S. thesis May 2010.

Logan Williams, Co-advised 40% with Robin Shandas, MCEN. “Micro Echo PIV,” M.S. thesis December 2008.

Paul Miller, “Flow in a Model Aorta,” M.S. thesis May 2007.

Meg Van Sciver, “Flow Field Measurements of Human Generated Infectious Aerosols,” M.S. Thesis, May 2005.

Andrew Shugard, “Emissions Measurement in a Split Diffusion Flame,” M.S. project 2004.

Heather Chluda, “Vorticity Analysis of Left Ventricular MRI Data”, Sept 2003- May 2004. MS project.

John Giardino, Co-advised 90% with Liz Bradley. “Stereomicroscopic Particle Image velocimetry” MS Thesis,. Completed May 2004.

Josh Madsen, “Emissions Measurement in a Split Diffusion Flame,” M.S. project 2003.

Aravind Pittyvasanthankar, “Streamwise Vorticity Measurements in a Jet,” M.S. project May 2004.

Bethany Rotherham, “Testing of Fin Designs for Air Cooled Condensers,” M.S. project Fall 2002.

Evan Collier, “Modeling of Mitral Flow Data,” MS Thesis, May 2001-May 2002.

Jason Cooke, “Fluid Dynamics of Ventricular Filling,” MS Thesis, May 2001.

Eric Marquardt, “Compact Heat Exchanger Design,” M.S. thesis, May 2002.

Edward Poulin, “Design of the Model Ramjet Automatic Control System,” M.S. 1995

Devireddy Ramachandra, “Numerical Simulation of Vortex/Wall Interactions,” M.S. thesis May 1995.

Margaret Thames, “Seeding of Low Velocity Flows,” M.S. thesis 1995.

Brian Heiler, “High Energy Fuel Combustion,” M.S. May 1994.

Matt Cuddy, “Forced Laminar Diffusion Flame,” M.S. May 1994.

Patrick Zmarzly, “Velocity Measurements in an Electric Field Enhanced Outside Vapor Deposition Flame,” M.S. December 1993.

Suzy Till, National Science Foundation GK-12 Fellow, 1999-2000.

Frank Friedl, National Science Foundation GK-12 Fellow, 2000-2001

Service on MS and PhD thesis committees for an additional 64 students.

Supervised undergraduate involvement in research via independent study and UROP/URAP/Undergraduate research independent study for 189 students. Eighty-five as of March 2000. Since then:

85) Craig Lanning
86) Rebecca Knobel,
87) Matt Boardman,
88) Sven Nuesken,
89) Nohn Nord Su01,
90) Roscoe Schenk Su01,
91) John Giardino F01,S02,sum02,f02, s03
92) Jesse Negretti F01, S02, sum02, f02, s03
93) Jared Parker, sum02,
94) Rachel Loziuk su02,
95) Ryan Artale su02,F02,
96) Ryan Grether F02,
97) Alan MolitorisF02
98) Tiffany Zimmer, Sum 03,
99) Timothy Drost Sum 03,
100) Paul Miller F03-F06
101) Kurt Danielson F03-S06
102) Matthew Culbreth Sum03-S05
103) Iris Lopez Sum04. SMART
104) Jean Doriot Sum04 SMART.
105) Daniel Cahn Sum04-F04 UROP.
106) Alissa Wong Sum04 IS-S05 urop.
107) Vlad Munteneau Sum04 IS-S05urop
108) Jeremy Ralph S05 DLA
109) Burhan Muzaffar S05 DLA
110) Galan Moody Sum, F 05 -Spum 076 UROP
111) Kyle Simmons Sum 05 SURE
112) Kevin Coelho F05-S06 indep
113) Cody Taylor F05 UROP
114) Gala Camacho F05 UROP
115) Andrew Shulman F05 DLA
116) Eli Luke, indep Sum06
117) Seth Faulb indep Sum06
118) Max Schroeder indep Sum06
119) Nate Farrel lizpaid Sum 06
120) Eric Scheibler lizpaid Sum 06-F06
121) Bronwyn Hayworth indep Spr0 4
122) David Shaw indep Spr04
123) Luis Loma Sp07-
124) Tim Coates SURE Sum07
125) James Kostrzewa Sp09
126) Jeff Payne Sp09
127) Josh Russ Sp09
128) Larissa Rhodes F09-F10
129) Patrick Lewis,
130) Tucker Porter.
131) Gabriel, Meghan, OR flow Sp10,
132) Logel, Lisa ORflow Sp 10
133) Nielsen, Cameron Fuel Spray Sp - F 10.
134) Virkler, Adam Fuel Spray SpSumF 10.
135) Greg Miller, Fuel Spray SumF2011 InStdy.
136) Jon Horneber SumF2011
137) Bailey Leppek Fluper F2011indepstudy, Sp2012 UROP. SumF2011 InStdy.
138) Jonathan Holton, Fuel Spray Sp2012 InStdy.
139) Nathan Kranz Fuel Spray Sp2012 InStdy
140) Matthew Long, ORFlow Sp2012 InStdy 1credit.
141) Jason Stewart, Fuel Spray Fall 2012 &Sp 2013
142) Taylor Jacobsen, Fuel Spray Fall 2012 &Sp 2013
143) Blake Cassidy, Fuel Spray Fall 2012 &Sp 2013
144) Zachary Golden, Effervescent spray UROP AY 2012-13.
145) Omar Siddiqi, Effervescent spray UROP AY 2012-13.
146) Trey Miller indepstudy, UROP 4dMRI
147) Davis Benz UROP 4dMRI
148) Ashlyn Norberg F2012
149) Jonathan Holton, Fuel Spray Sp2012 InStdy.
150) Nathan Kranz Fuel Spray Sp2012 InStdy.
151) Luis Cocha Aestheics S13
152) Noel Castenada S13-Sum13, Aesthetics
153) Brisa Garcia Gonzales Sum13 – Spg 14.
154) Garrison Vigil, aero ug? FV research Fall 14 – Sp 15?
155) Scott Oubre Hi Volt Sum-Sp 15,
156) Daniel Bosnich Hi Volt Sum-Sp 15
157) Elizabeth Whitman 4DMRI Sum 14
158) Scott Schloss 4dMRI Summer 14,
159) Luke Farny cardiac CFD Summer 14.

160) Sam Wishnie Sp 15 droplet impact IS.
161) Kelsey Coxon, Summer 2015
162) Jamey Summer 2015
163) Felix Jimenez Jamey 2015
164) Mayron Sardou Jamey 2015,
165) Paul Silva Jamey summer 2015
166) Ryan Zoukis Jamey Summer 2015
167) Sarah Lafasto FV Fall 2015
168) Travis Bildhal Spring 2015
169) Kyle Walters Droplet machine Summer/Fall 16
170) Kyle Hollis Droplet machine Summer/Fall 16
171) Brendan Lee Cardiac data vis Summer 16
172) Jonathon Stelling Mesa U Cardiac data vis Summer 16
173) Edney Mesa U Cardiac data vis Summer 16
174) Petrides Laser studies Sp 17
175) Tiangen Ge (grad) Cardiac Fluids Sp17
176) James Connolly (grad) Cardiac Sp 17
177) Jordan Krist Summer 17
178) Joel Human Cardiac Spg 18 – Spg 19 BSI
179) Alejandro Perez Cardiac Spg 18 – Spg 19, F19, Spg 2020 BSI
180) Reece Jones Cardiac Summer – Fall 18
181) Chris Davidhoff variable power laser Spg 19
182) Behruz Rashidov VR for cardiac Sp 19
183) Miles Wright Cardiac Sp 19, summer 19, Summer 20
184) Ioana Dumitru Cardiac F 19, Summer 20
185) Kristen Oliver A&S Honors Thesis, Noah's F19-Sp20
186) Kaiya Wahl cardiac Sum,F 2020
187) Hugh Scribner DLA and URA AesDes survey, F 2020 – S 2022
188) Cordelia Kim indep Cardiac S 21.
189) Emelie Feve indep MusicInstFlow S 23
190) Tandralee Chetia, PIV S 24.

Summary of Courses Taught

Course	Semester	Enrollment
MCEN 1020/GEEN 1300 Computational and Analytic Tools: Lecture and laboratory	F 91	97
	F 92	88
	F 93	98
	F 94	94
GEEN 1400 First Year Projects: Lecture and laboratory	F97	30
	F98	29
	F99	23
	F01	28
	S04	30
	S08	30
MCEN 3012 Thermodynamics I: Lecture	F01	102
	F02	98
	F03	160
	F05	130
MCEN 3021 Fluid Mechanics: Lecture	F 95	82
	F 96	70
	F 07	175
	F 08	145

	F 09	128
	F 10	129
	F 11	64
	F 12	120
	S 14	80
	F 15	80
	S 18	117
	S 19	60
	F 20	75
MCEN 3022 Heat Transfer	S99	84
MCEN 3027 Measurements Laboratory: Lecture and laboratory	S 92	41
	S 93	54
	S 94	48
	S 95	46
	S 96	38
	F 97	10
	F 98	24
	F 99	37
	S 01	47
MCEN 3030 Numerical Methods: Lecture	S 93	83
	S 94	94
	S 97	54
	S 98	53
MCEN 3032 Thermodynamics 2	S 12	60
	F 12	14
	F 13	63
MCEN 4027 Senior Laboratory: Lecture and laboratory	S 91	23
MCEN 4151/5151 Flow Visualization: The Physics and Art of Fluid Flow. Co-taught as FINE 4097/5097, now crosslisted as FILM 4200/ARTS 5200 and ATLS 4519/5519. New course development.	S03	42
	F04	25
	S06	25
	F07	35
	S 09	33
	S 10	30
	S 11	45
	S 12	50
	S 13	65
	S14	48
	F 15	43
	F 16	38
	S 18	55
	F 18	33
	F 19	42
	F 20	35
	F 22	30
	F 23	35

MCEN 4228 Undergraduate Research Seminar in Combustion. New course development	S 95	9
MCEN 4228/5248 Special Topic: Digital Data Acquisition. New course development	S99	14
MCEN 4228/5228 Special Topic: Perception of Design New course development	F 09 F 10 F 11	30 21 23
MCEN 4228/5228 / ATLS 4518/5518 Special Topic: Aesthetics of Design. New course development	Maymester 14 S 16 S 17 S 19 S 20 S 21 S 23 S 24	34 52 52 49 46 34 65 85
MCEN 5021 Fluid Mechanics: Lecture	F 96 F 16 F 18	12 27 12
MCEN 5022 Thermodynamics: Lecture	S02	16
MCEN 5228 (Team taught) Special Topics in Combustion Theory	F 93	5
MCEN 5258 (Team taught) Special Topics in Combustion Science and Applications	F 92	11
MCEN 6278 Fluid Mechanics Measurements. New course development.	S 98	5

University Service

Campus

Fellow of the Center for STEM Learning 2016 – present
Developed and presented the STRIPE workshop: Summer Teaching as Research Institute for Postdocs in Engineering 2013-2016. Renamed the Evidence Based Introduction to Teaching (EBIT) 2016-2019. This is a 20 hour workshop for 10 to 20 STEM postdocs from across the campus on teaching techniques. Also offered informally to Assistant Professors in the ME department.
Institutional Leader for the Center for the Integration of Research, Teaching and Learning (CIRTL), a nationwide network of institutions committed to advancing the teaching of STEM disciplines in higher education. 2012 – 2020
Faculty Teaching Excellence Program as Faculty Associate 2008- 2020
Campus representative to, and founding member of the Colorado Alliance on Bioengineering, 1998-2002

College

First Level Review Committee, Fall 2022 – present
ATLAS Faculty Affiliate/Fellow January 2018- present
ATLAS Faculty Search Committee, Spring 2016
Co-Organizer for CEAS Education Retreats: the First (April 2009), Second (Sept 2009), Fourth (August 2010) and Fifth (February 2011). Duties included setting agenda, publicity, selecting venue, food and staffing.
College Undergraduate Education Council, 2002-2006, 2008-2011
College Humanities and Social Science Committee, 2005-2006
College Committee on Bioengineering, Chair, 1998-2002
College Computer Resources Committee, 1994-1995.
College Freshman Computer Course Committee, 1993-1994.
College Diversity Retreat participant, 1994.
College Special Opportunity Search Committee, 1992.
ITLL Faculty Advisory Council 2006
ITLL Thermodynamics and Heat Transfer Focus Group 1997-2000
ITLL Measurements Focus Group, 1995.
ITLL High Performance Computing Focus Group, 1994.

Department

ME Teaching Quality Framework Departmental Action Team Chair, 2017-present.
Mechanical Engineering Undergraduate Committee, 1994-1996, 2001-2002, 2018-2021.
ME Preliminary Exam Committees: Fluids, Thermodynamics. Uncounted.
Mechanical Engineering Assessment and Curriculum Subcommittee Chair 2009-2011.
Mechanical Engineering Assessment and Curriculum Subcommittee Member 2012-2016
Mechanical Engineering ABET Committee Chair, 2004-2005 and 2011-2012.
Mechanical Engineering Undergraduate Committee Chair, 2002-2006, 2008-2009
Mechanical Engineering Executive Committee 2002-2006, 2007-2011
Mechanical Engineering Graduate Committee 1991-1992, Fall 2016
Mechanical Engineering Industrial Relations Committee, 1996-1998,2001.
Mechanical Engineering Ad Hoc Space Committee, 1997-1998.
Mechanical Engineering Ad Hoc Laboratory Committee, 1991-1996.
Mechanical Engineering Facilities Committee, 1992-1994.
Undergraduate Initiative Fund Department Administrator, 1994-2011.
ME Department Computer Network Administrator, 1993-1998.
ME Women's Network Facilitator, 1993-2002. Many ME Women's networking activities since forever.
Implemented the "Teamwork and Leadership Program" for M.E. freshmen, 1992-1994.
Faculty Advisor for Pi Tau Sigma (Mechanical Engineering Honor Society), 1994-2011.
Colorado Space Grant Consortium Reviewer, 1994.

Engineering Outreach Programs

"Fascinating Fluids" 1 day workshop for Expanding Your Horizons, 1992, 1994, 1995-1999, 2003-2006, 2008- 2019.

"Forces In Fluids" Author and presenter, 2 day K4-12 school teachers workshop, in conjunction with the ITLL and TeachEngineering.com workshop series, July 12-13, 2007.
"Forces In Fluids" Author and presenter, 3 hour high school teachers workshop, in conjunction with the APS Division of Fluid Dynamics annual meeting, 2006.
"Floating and Falling Flows" NSDL TeachEngineering.com activity module, 2006.
"Density Rainbow and the Great Viscosity Race" NSDL TeachEngineering.com activity module, 2006.
CU Wizards Shows "Too Hot To Handle", 10/03, 9/05. "Go with the Flow" 9/04.
"Shock Your Socks Off". K-12 Teacher Workshop 2002.
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John Zhai, James McNeill*, Jean Hertzberg, Wade Smith, and Greg Quinn. Semi-annual Progress Report #4 to TC 9.6 - Healthcare Facilities: Experimental Investigation of Operating Room Air Distribution ASHRAE 1397-RP. 2010 ASHRAE Meeting, 6/26-30/2010, Albuquerque, NM.

Jean Hertzberg "Impact of Visual Perception" Poster presentation at the NSF "Exploring How People Learn Engineering Workshop" Golden, CO. August 1-4, 2010.

James McNeill*, Jean Hertzberg, and Zhiqiang Zhai, "Combined experimental and computational investigation of sterile air flows in surgical environments. QE.00006.," in *Bulletin of the American Physical Society*, vol. 55 (presented at the 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, CA., 2010), 358, http://meetings.aps.org/Meeting/DFD10/Event/134057.

Jean Hertzberg, "Seeing Fluid Physics: Outcomes From a Course on Flow Visualization. QE.00003," Abstract in *Bulletin of the American Physical Society*, vol. 55 (presented at the 63rd Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA., 2010), 358. http://meetings.aps.org/Meeting/DFD10/Event/134054.

Joseph VanAmberg*, Matthew Blessinger*, Dung Dinh Luu*, Kevin McCoy*, Jean Hertzberg, "A Turbulent Particle Laden Gas Jet in Water." Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Melissa Lucht*, Jean Hertzberg, "A Biologically Imperative Jet." Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Ilya Lisenker*, Jean Hertzberg, "Spinning on a Skillet." Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Jonathan Varkovitzky*, Chris Svedman*, Peter Mitrano* and Jean Hertzberg, "Down the Drain." Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Corey Davis* and Jean Hertzberg, "Reflection, Refraction, Diffraction and Dispersion." Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Patrick Wessels* and Jean Hertzberg, “The Sandwich, Deconstructed.” Gallery of Fluid Motion Poster, 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach CA, 2010.

Ilya Lisenker*, Jean Hertzberg, “Spinning on a Skillet.” Entry in the NSF/ Science Magazine 'International Science and Engineering Visualization Challenge'. Selected as a Finalist. 2010.

John Zhai, James McNeill*, Jean Hertzberg, Wade Smith, and Greg Quinn. Semi-annual Progress Report #5 to TC 9.6 - Healthcare Facilities: Experimental Investigation of Operating Room Air Distribution ASHRAE 1397-RP. 2011 ASHRAE Winter Meeting, 1/29-2/2/2011, Las Vegas NV.

John Zhai, James McNeill*, and Jean Hertzberg, “Semi-annual Progress Report #6 to TC 9.6 - Healthcare Facilities: Experimental Investigation of Operating Room Air Distribution ASHRAE 1397-RP” (presented at the 2011 ASHRAE Annual Meeting, Montreal, Que., Canada, 25-29 2011).

Jean Hertzberg, Bailey Leppek*, Tiffany Ito, and Tim Curran., “Impact and Outcomes of a Flow Visualization Course. IMECE2011-64749” (Technical presentation only presented at the ASME 2011 International Mechanical Engineering Congress & Exposition - Congress2011, Denver, Colorado, November 11, 2011), http://www.asmeconferences.org/Congress2011/Author/ConfirmAbstract.cfm.

James McNeill*, Jean Hertzberg, and John Zhai, “Buoyancy driven acceleration in a hospital operating room indoor environment. H24.00001,” in *Bulletin of the American Physical Society*, vol. 56 (presented at the 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, CA., 2011), http://meetings.aps.org/link/BAPS.2011.DFD.H24.1.

Jean Hertzberg and Bailey Leppek*, “Attitudes Towards Fluids: the Impact of Flow Visualization. L10.00009,” in *Bulletin of the American Physical Society*, vol. 56 (presented at the 64th Annual Meeting of the Division of Fluid Dynamics, Baltimore, MD, 2011), http://meetings.aps.org/link/BAPS.2011.DFD.L10.9.

Brett E. Fenster, A.M. Freeman, J.K. Buckner, J. Browning*, J.R. Hertzberg, and J.D. Schroeder. “Pulmonary artery vortex parameters for the prediction of pulmonary vascular hemodynamics.” 55th Annual Thomas L. Petty Aspen Lung Conference. Aspen, Colorado, June 6-9, 2012. http://www.ucdenver.edu/academics/colleges/medicalschool/departments/medicine/Pulmonary/Conferences/ASPEN/Pages/2013%20Conference.aspx.

Jean Hertzberg, Bailey Leppek*, and Kara Gray*, “Art for the Sake of Improving Attitudes towards Engineering,” presented at the 4th Annual Symposium on STEM Education, CU Boulder, October 1 2012.

Brett Fenster, Joyce Schroeder, Luis Lasalvia, Sven Zuehlsdorff, Brad Bolster, Jean Hertzberg, and Jamey Browning*, "Integrated Diagnostics Characterization of Right Ventricular Diastolic Flow Dynamics Using Four Dimensional MRI and Biomarkers," Year End NJMRC-2010-MR-02-CMT-FENSTER, Nov. 2012.

Fenster,B, Freeman,A, Hertzberg,J, Browning,J*, Buckner,J, Schroeder,J "4D CMR-Derived Pulmonary Artery Vortex Properties for the Prediction of Pulmonary Vascular Hemodynamics" Radiological Society of North America 2012 Scientific Assembly and Annual Meeting; November 25-30, 2012 Chicago IL. rsna2012.rsna.org/search/event_display.cfm?em_id=12024886

James Browning*, Brett Fenster, Jean Hertzberg, and Joyce Schroeder. "Right Ventricular Hemodynamics in Patients with Pulmonary Hypertension." Presentation; abstract in *Bulletin of the American Physical Society*, 57: no 17:272. San Diego, California USA: APS, 2012. http://meeting.aps.org/Meeting/DFD12/Event/178246.

Jean Hertzberg, "Teaching CFD as a Black Box: A Validation and Verification Approach. L30.00010," in Presentation; abstract in *Bulletin of the American Physical Society*, San Diego, California USA, 2012, vol. 57, no 17, p. 272. http://meeting.aps.org/Meeting/DFD12/Event/178724

Jean Hertzberg. "First Day Framing Activities for SEI," January 14, 2013. http://www.colorado.edu/sei/fac-resources/framing.html.

Jean Hertzberg, Dewey Dykstra, Noah Finkelstein, Kathleen Hinko, Mel Sabilla, Ben Van Dusen, and Stamatis Vokos. "That Is Cool: The Nature Of Aesthetics in Physics - PERC 2013 Abstract Submission Detail Page." Round Table presented at the Physics Education Research Conference 2013, Portland, OR, July 17, 2013. http://www.compadre.org/per/perc/2013/detail.cfm?ID=5210.

Jean Hertzberg. "Aesthetics of Flow Visualization." Poster presented at the Physics Education Research Conference 2013, Portland, OR, July 17, 2013. http://www.compadre.org/per/perc/2013/detail.cfm?ID=5211.

Brett McQuillan*, Jean Hertzberg, and LUPITA MONTOYA. "On the Development of Indoor Air Quality Control Using Synthetic Jets. Paper (Poster) Number: 2CH.6." Portland, OR, Sept. 30 - October 4, 2013. http://2013.aaar.org/.

Jean Hertzberg. "That Is Cool: The Nature Of Aesthetics in Fluid Physics." In *Bulletin of the American Physical Society*, 58:, Number 18:164–165. Pittsburgh, PA, November 24 - 26, 2013. http://meetings.aps.org/Meeting/DFD13/Event/202604.

Jean Hertzberg. "Educational Resources Including LearnChemE.com." Presentation at APS DFD Fluids Education Lunch Workshop presented at the American Physical Society Division of Fluid Dynamics 66th Annual Meeting, Pittsburgh, PA, November 25, 2013. https://berkeley.app.box.com/DFD-edu/1/1333134528/11931402914/1.

Jean Hertzberg. *The Power of Aesthetics*. Annual Progress Report, Standard Grant. National Science Foundation, December 8, 2013.

Browning, Jamey*, Brett Fenster, Jean Hertzberg, and Joyce D. Schroeder. "Right Heart Vorticity in Subjects with Right Ventricular Diastolic Dysfunction." presented at the 7th World Congress of Biomechanics, Boston, MA, USA, July 6, 2014.

Jean Hertzberg, Kate Goodman*, Tim Curran, and Noah Finkelstein. "Aesthetics and Visual Perception in Engineering Education." Small poster presented at the NSF Engineering Education Awardees' Meeting, Arlington, VA, United States, September 20, 2014.

Katherine Goodman*, Jean Hertzberg, Tim Curran, and Noah Finkelstein. "Expanding Perception through Flow Visualization: Helping Students See Fluid Dynamics Beyond the Classroom." Poster presented at the 6th Annual Symposium on STEM Education, University of Colorado, Boulder, September 29, 2014. http://www.colorado.edu/csl/2014_Symposium.html.

Jean Hertzberg, Jamey Browning*, Brett E. Fenster, and Joyce D. Schroeder. "Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart." Talk presented at the Biomedical Engineering Society Annual Meeting, San Antonio, TX, United states, October 22, 2014.

Vitaly Kheyfets, James Smyser, Alex Honeyman*, Jamey Browning*, Jean Hertzberg, Joyce Schroeder, Brett Fenster, and Robin Shandas. "Changing Vorticity in the Main Pulmonary Artery Is Associated With RV-PA Decoupling in Pulmonary Hypertension." Oral presentation presented at the Biomedical Engineering Society Annual Meeting, San Antonio, TX, United states, October 22, 2014.

Browning, James*, Jean Hertzberg, Brett Fenster, and Joyce D. Schroeder. "Right Heart Vortex Entrainment Volume and Right Ventricular Diastolic Dysfunction." presented at the 67th Annual Meeting of the APS Division of Fluid Dynamics, San Francisco, November 23, 2014. http://meetings.aps.org/Meeting/DFD14/scheduling?ukey=1008751-DFD14-JnHdno.

Hertzberg, Jean, Tim Curran, and Katherine Goodman*. "Measuring Visual Expertise in Fluid Dynamics. E7.00002." Oral presentation presented at the APS -67th Annual Meeting of the APS Division of Fluid Dynamics, San Francisco, CA, November 23, 2014. http://meetings.aps.org/Meeting/DFD14/Session/E7.2.

Jean Hertzberg. The Power of Aesthetics. Annual Progress Report, Standard Grant. National Science Foundation, December 8, 2014.

Brett E. Fenster, Chris A. Podgorski, Joyce D. Schroeder, Bryan Lin, Slade Reisner, J Kern Buckner, Jamey Browning, Jean R Hertzberg, and Michal Schafer. "Left Ventricular Vorticity Is a Marker of Ventricular Interdependency in Pulmonary Arterial

Hypertension." Poster presented at the SCMR/Euro CMR Joint Scientific Sessions, Nice, France, February 5, 2015.

Christopher A. Podgorski, Michal Schafer, Jamey Browning*, Jean R. Hertzberg, Joyce D. Schroeder, and Brett E. Fenster. "Right Ventricular Vorticity Is a Marker of Systolic Function in Pulmonary Arterial Hypertension." presented at the ACC.15 American College of Cardiology 64th Annual Scientific Session and Expo, San Diego, California USA, March 14, 2015. http://accscientificsession.cardiosource.org/ACC/Science/Abstracts.aspx.

Katherine Goodman*, Jean Hertzberg, and John K Bennett. "Engineering Education as Transformative Experience: A Framework for Examining Course Success." presented at the ASEE 2015 Rocky Mountain Section Conference, Metropolitan State University of Denver, April 10, 2015. http://www.msudenver.edu/et/aseeconference2015/.

Michal Schafer, Brett Fenster, Jean Hertzberg, J. Kern Buckner, Kendall Hunter, and Vitaly Kheyfets. "Proximal Pulmonary Arterial Helicity Is Marker of Hemodynamics and RV Performance in Pulmonary Arterial Hypertension." presented at the American Thoracic Society Scientific Sessions, Denver, Colorado, May 15, 2015. http://conference.thoracic.org/2015/.

Vitaly Kheyfets, Michal Schafer, James Smyser, Alex Honeyman*, James Browning*, Jean Hertzberg, Joyce Schroeder, Brett Fenster, and Robin Shandas. "Irregular Blood Flow Patterns in the Development of Pulmonary Hypertension (was Do Isolated Regions of Decreased WSS Contribute to Vascular Dysfunction in Pulmonary Arterial Hypertension?)." presented at the ATS 2015 International Conference, Denver, Colorado, May 15, 2015. http://conference.thoracic.org/2015/.

Jean Hertzberg. "Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization." Poster presented at the Cultivating Ensembles in STEM Education and Research (CESTEMER), Berkeley, June 10, 2015. http://www.improvscience.org/cestemer15.

Katherine Goodman*, Tim Curran, Jean Hertzberg, and Noah D. Finkelstein. "Expanding Perception: How Students 'See' Fluids." Seattle, WA, United states: ASEE, 2015. http://www.asee.org/public/conferences/56/papers/12169.

James Browning*, Jean Hertzberg, Brett E. Fenster, and Joyce Schroeder. "Right Heart Vorticity and Right Ventricular Diastolic Dysfunction." In Bulletin of the American Physical Society, Vol. Volume 60, Number 21. American Physical Society, 2015. http://meetings.aps.org/Meeting/DFD15/Session/R24.12.

Jean Hertzberg, James Browning*, Brett E. Fenster, and Joyce Schroeder. "Right Heart 4DMRI Flow Visualization in Normal and Hypertensive Subjects." In Bulletin of the American Physical Society, Vol. Volume 60, Number 21:110. Boston, MA, USA:

American Physical Society, 2015.
http://meetings.aps.org/Meeting/DFD15/Session/R24.11.

Jean Hertzberg, and Katherine Goodman*. "Indicators of Student Engagement in Fluid Mechanics." In Bulletin of the American Physical Society, Vol. Volume 60, Number 21. Boston, MA, USA: American Physical Society, 2015.
http://meetings.aps.org/Meeting/DFD15/Session/E3.1.

Jean Hertzberg, Katherine Goodman*, and Tim Curran. "Seeing Fluid Physics via Visual Expertise Training." In Bulletin of the American Physical Society, Vol. Volume 61, Number 20. Portland, OR: American Physical Society, 2016.
http://meetings.aps.org/Meeting/DFD16/Session/D9.1.

Jean Hertzberg, James Browning*, and Brett Fenster. "Velocity and Vorticity in the Right Heart from 4DMRI Measurements." In Bulletin of the American Physical Society, Volume 61, Number 20:408. Portland, OR: American Physical Society, 2016.
http://meetings.aps.org/Meeting/DFD16/Session/L15.7.

Hertzberg, Jean. "Flow Visualization: Collected Student Work, 2004-2016." Concourse projection presented at the American Physical Society Division of Fluid Dynamics 70th Annual meeting, Denver, Colorado, November 19, 2017.
https://sway.com/YFP1eh4Hz9s1ZY1t?ref=Link&loc=play.

Hertzberg, Jean, and Katherine Goodman*. "Aesthetics and Emotional Engagement: Why It Matters to Our Students, Why It Matters to Our Professions Part 2: Workshop presented at the American Society for Engineering Education Zone IV Conference March 25-27 2018, Boulder, CO. https://asee.org/public/conferences/112/papers/24180.

Jean Hertzberg. "Cardiac Data Visualization." Lightning Slide presented at the Computational Fluid Dynamics Software Infrastructure Kickoff Meeting, Boulder, CO, May 16, 2018. https://www.colorado.edu/events/cfdsi/events-registration.

Joel Human*, Alejandro Perez*, Reece Jones*, James Browning*, Joyce Schroeder, Brett Fenster, and Jean Hertzberg. "Wall-Bounded Vorticity in the Right Heart from 4DMRI Measurements." presented at the Rocky Mountain Fluid Mechanics Symposium, Boulder, CO, August 13, 2018.
http://rockymountainfluids.org/attachments/RMFM2018_TechnicalProgram.pdf.

Jean Hertzberg. "Postdoctoral Learning Communities." Poster presented at the Fall 2018 CIRTL In-Person Meeting, Madison, WI, October 11, 2018.

Jean Hertzberg. "The Best of Flow Vis 2018." In *Bulletin of the American Physical Society*, Vol. L04.00003. Atlanta, Georgia: American Physical Society, 2018.
http://meetings.aps.org/Meeting/DFD18/Session/L04.3.

Jean Hertzberg, Joel Human*, Alejandro Perez*, Reece Jones*, James Browning*, Joyce Schroeder, and Brett Fenster. "Wall-Bounded Vorticity in the Right Heart from 4DMRI Measurements." In *Bulletin of the American Physical Society*, Vol. G19.00004. Atlanta, Georgia: American Physical Society, 2018. http://meetings.aps.org/Meeting/DFD18/Session/G19.4.

Jean R Hertzberg. "What Good Are Aesthetics?" In *Bulletin of the American Physical Society.* Seattle, WA: American Physical Society, 2019. http://meetings.aps.org/Meeting/DFD19/Session/H30.2.

Jean Hertzberg. "Projects in Fluids Courses Made Easy (for You)." In *Bulletin of the American Physical Society*. Seattle, WA: American Physical Society, 2019. http://meetings.aps.org/Meeting/DFD19/Session/H29.9.

Jean Hertzberg. "Flow of the Heart." Artwork Exhibition presented at the Joint Mathematics Meeting, Denver Colorado, January 15-18, 2020. http://gallery.bridgesmathart.org/exhibitions/2020-joint-mathematics-meetings/jeanbizhertzberg.

Abhishek Kumar*, Teyha Stockman Jean Hertzberg, Shelly Miller, Marina Vance, Sameer Patel, Darin Toohey. "Visualization of Flows from Musical Instruments." Posted video presented at the Rocky Mountain Fluid Mechanics Research Symposium, Online from CU Boulder, August 4, 2020. https://vimeo.com/444987280.

Jean Hertzberg. "Flow of the Heart." In *D Art 2020 Gallery*. 24th International Conference on Information Visualization. Online, Victoria University, Australia & Technische Universität Wien, Austria, 7 – 11 September 2020. https://dart2020.wixsite.com/d-art-2020/jeanhertzberg

Hertzberg Jean, ed. "Students' work at CU Boulder." In *D Art 2020 Gallery*. 24th International Conference on Information Visualization. Online, Victoria University, Australia & Technische Universität Wien, Austria, 7 – 11 September 2020. https://dart2020.wixsite.com/d-art-2020/jean-hertzberg-and-her-students.

Abhishek Kumar*, Jean Hertzberg, Tehya Stockman, Shelly Miller, Sameer Patel, Marina Vance, Darin Toohey, Donald K. Milton, Shengwei Zhu, Lingzhe Wang, Jelena Srebric. "Aerosols in Performance." 73rd Annual Meeting of the APS Division of Fluid Dynamics. Abstract published in *Bulletin of the American Physical Society*, W17.00005. Online from Chicago IL.: American Physical Society, 2020. https://meetings.aps.org/Meeting/DFD20/Session/W17.5.

Jean Hertzberg and Jeffrey Knutsen. "Active Engagement in the Time of COVID." 73rd Annual Meeting of the APS Division of Fluid Dynamics. Abstract published in *Bulletin of the American Physical Society,* Q01.00006. Online from Chicago IL.: American Physical Society, 2020. https://meetings.aps.org/Meeting/DFD20/Session/Q01.6.

Abhishek Kumar*, Jean Hertzberg, Tehya Stockman, Shelly Miller, Sameer Patel, Marina Vance, Darin Toohey, Donald K. Milton, Shengwei Zhu, Lingzhe Wang, Jelena Srebric. "Flow Visualization and Aerosol Emissions from Musical Instruments." Presented at the International Virtual Meeting on Measurements of Aerosols from Singing or Playing Wind Instruments, Online, March 23, 2021.

Hugh Scribner*, Katherine Goodman, and Jean Hertzberg. "The Influence of Aesthetics on Engineering Learning." Presentation/Workshop presented at the ASEE Rocky Mountain Section Unconference 2021, Online, June 9, 2021. Abstract published in proceedings: http://www.uwyo.edu/asee/rms/details.html .

Abhishek Kumar*, Tehya Stockman, Jean Hertzberg, Shelly L. Miller, Don Milton, Jelena Srebric, Shengwei Zhu, Lingzhe Wang, Marina Vance, Darin Toohey, Sameer Patel, "Flow Visualization and Aerosols In Performance." Presentation/Workshop presented at the SB3C2021: Summer Biomechanics, Bioengineering, and Biotransport, Online, June 14, 2021. https://vimeo.com/564329281 .

Abhishek Kumar*, Tehya Stockman, Jean Hertzberg, Shelly L. Miller, Don Milton, Jelena Srebric, Shengwei Zhu, Lingzhe Wang, Marina Vance, Darin Toohey, Sameer Patel, "Flow Visualization and Aerosols In Performance." Presentation:/Video presented at the 19th International Symposium on Flow Visualization, Online, September 14-16, 2021.

Jean Hertzberg, Cynthia Hampton, Daniel Knight, and Sarah Andrews. "Tools for Assessing Teaching in Promotion and Tenure." Online, 9 -11, 2021, ASCN/NSEC Transforming Institutions Conference https://ascnhighered.org/ASCN/transforming_institutions/2021/program/posters/session_b/2/243604.html.

Jean Hertzberg, Cynthia Hampton, Daniel Knight, and Sarah Andrews. "Tools for Assessing Teaching in Promotion and Tenure." TEval Knowledge Exchange, online. October 18, 2021.

Jean Hertzberg, Katharina Kann, Katherine Goodman, Hugh Scribner*, and Ananya Ganesh*. "Natural Language Processing Meets Attitude/Sentiment Survey Instrument." Poster presented at the IRT Poster Blitz, DLC, CU Boulder, April 12, 2022.

Jean Hertzberg, "The Flow Visualization Guidebook." Remote presentation Z27.00008 at the American Physical Society Division of Fluid Dynamics 75th Annual Meeting. Abstract published in *The Bulletin of the American Physical Society*. American Physical Society. Accessed January 31, 2023. https://meetings.aps.org/Meeting/DFD22/Session/Z27.8.

Stockman, Tehya*, Jean Hertzberg, and Abhishek Kumar*. "Flow Visualization and Aerosols in Performance." Presentation by Abhishek Kumar at the 182nd Annual Meeting

of the Acoustical Society of America. May 23-27 2022, Denver CO. Abstract published in *The Journal of the Acoustical Society of America* 151, no. 4 (April 2022): A59–60. https://doi.org/10.1121/10.0010654.

Argudit Chauhan*, Sarthak Samal, Jean R Hertzberg, and Debanjan Mukherjee. "Development and Feasibility Analysis of an Idealized Benchtop Model to Characterize Cerebral Flow Pathways. Abstract: J14.00002." Presentation by Argudit Chauhan at the 76th Annual Meeting of the American Physical Society Division of Fluid Dynamics November 19–21, 2023 Washington DC. Abstract published in *Bulletin of the American Physical Society*. Washington, D.C.: American Physical Society, 2023. https://meetings.aps.org/Meeting/DFD23/Session/J14.2.

Jean Hertzberg. "Aesthetics and Student Attitudes in Flow Visualization." Invited presentation at the Perceiving Art: Physics Principles & Research Challenges, an NSF funded workshop. Institut Henri Poincaré, Paris, France 2023. https://www.ihp.fr/en/news-research-activities/perceiving-art-physics-principles-research-challenges.

Preprints, Videos and Technical Reports

NFHS. *Performing Arts Aerosol Study Preliminary Results 2 (Clean Audio)*, 2020. https://www.youtube.com/watch?v=u8JgK-vA8Qc&feature=youtu.be. https://www.nfhs.org/media/4119369/aerosol-study-prelim-results-round-2-final-updated.pdf
Boulder, Flow Visualization @ CU. PrelimMitigation CU Boulder, 2020. https://vimeo.com/440174158.
Boulder, Flow Visualization @ CU. Schlieren Alphabet Test CU Boulder, 2020. https://vimeo.com/440171608.
Boulder, Flow Visualization @ CU. Laser Sheet Example - Trumpet, 2020. https://vimeo.com/443506508.
Boulder, Flow Visualization @ CU. Oboe Preliminary, 2020. https://vimeo.com/444722118.
Boulder, Flow Visualization @ CU. Singing With Mask Comparison, 2020. https://vimeo.com/471201848. &1NRQi$T#r%B

Invited Seminars and Papers

1. "Fluid Mechanics of Flame Stabilization," Brown University, Providence R.I., October 1986.
2. "Flame Anchoring in Premixed Flames" University of Washington, Seattle, WA, October 1986.
3. "Vortex Shedding in Rod Stabilized Flames" University of Southern California, L.A. CA, October 1986.
4. "Vortex Shedding in Rod Stabilized Flames" California Institute of Technology, Pasadena, CA, January 1987.

5. “Vortex Dynamics in an Asymmetric Sudden Expansion” California Polytechnic State University, San Luis Obispo, CA, May1990.
6. “Vortex Dynamics in an Asymmetric Sudden Expansion” University of Colorado, Boulder, CO, May 1990.
7. “Behavior of Confined Shear Layers in a Rectangular Sudden Expansion” Cornell University, Ithaca, NY, August 1990.
8. “Behavior of Confined Shear Layers in a Rectangular Sudden Expansion” Arizona State University, Tempe, AZ, September 1990.
9. “Phase-Locked Three-Dimensional Flow in a Rectangular Sudden Expansion,” Colorado School of Mines, Golden, CO, April 1993.
10. “Combustion Fluid Mechanics” Talk for ASME CU Boulder student chapter. February 1997.
11. “Split Jets and Flames in Microgravity,” NASA Lewis, Cleveland OH, October 1997.
12. “Cardiac Fluid Dynamics,” CU Boulder student chapter of the Biomedical Engineering Society, April 2001.
13. “Modeling Mitral Flow Data,” Applied Mathematics Colloquium, Tuesday February 4, 2003, CU Boulder.
14. “Flow Visualization” with Alex Sweetman. Gallery talk on Flow Visualization course, at the Boulder Museum of Contemporary Art, 4/27/04. Accompanied full exhibit of images from the course, from 3/12/2004 to 5/2/2004
15. J. Hertzberg and A. Sweetman, “Art and Physics: A Flow Visualization Course and Outreach Experience”. Invited paper, DH02, 2005 Winter Meeting of the American Association of Physics Teachers. Albuquerque, NM, January 8-12, 2005. Abstract published in *The Announcer*, Vol 34, pg 106.
16. "Teaching Flow Visualization: the Art and Physics of Fluid Flow" with Alex Sweetman. Invited talk, part of the CU Special Year in Art and Math. NCAR Mesa Laboratory, Feb 10, 2005
17. “A Course in Flow Visualization: the Art and Physics of Fluid Flow” Physics Education Research group meeting, Oct. 2005.
18. “Beautiful Physics From Ordinary Fluids” Guest lecture in MCEN 3021, 9/28/2006.
19. “Beautiful Physics From Ordinary Fluids” Sigma Xi invited talk, 11/6/2006.
20. “Beautiful Physics From Ordinary Fluids” TERC invited talk, 1/17/2007.
21. “Beautiful Physics From Ordinary Fluids” Applied Math Dept Seminar, CU Boulder, 2/16/2007.
22. “Beautiful Physics From Ordinary Fluids” Aerospace Engineering Dept Seminar, University of Washington, 3/5/2007.
23. “Beautiful Physics From Ordinary Fluids” Invited Seminar at University of Wyoming, Laramie, 3/6/2008.
24. “Introduction to Flow Visualization” Building Systems Seminar, CU Boulder 10/9/2008.
25. “Impact and Outcomes of a Flow Visualization Course” Physics Education Research group meeting, August 2009.
26. “Impact and Outcomes of a Flow Visualization Course” Fluids Connections (Dept. Mechanical Engineering, CU Boulder) group meeting, November 2010.

27. “Art for the Sake of Improving Engineering Education” CU Engineering Education Research Group meeting, November 2011.
28. “The Psychology of Praise”, Tau Beta Pi initiation dinner, 4/15/2012.
29. “The Aesthetics of Beauty, Power and Destruction,” APS DFD Special Session on Media Communications, San Diego, California USA, 18-Nov-2012
30. “The Aesthetics of Beauty, Power and Destruction.” Invited presented at the Water Resources Seminar, Department of Civil, Environmental and Architectural Engineering, Boulder, CO, January 16, 2013.
31. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar presented at the Fluids Seminar Series, University of Colorado, Boulder, September 3, 2013.
32. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar presented at the Engineering Education Research Group, University of Colorado, Boulder, September 17, 2013.
33. “Becoming an Engineering Education Researcher.” Seminar presented at the ATLAS Graduate Seminar, University of Colorado, Boulder, October 3, 2014.
34. “Aesthetics of Flow Visualization: Art in Engineering.” Presentation/Workshop presented at the Graduate Teacher Program Friday Forum, University of Colorado, Boulder, October 10, 2014.
35. “Aesthetics and Emotional Engagement in Engineering Education.” Interactive Workshop presented at the DBER: Disciplinary Based Education Research Seminar, University of Colorado, Boulder, February 18, 2015. With Katherine Goodman.
36. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Dept. Mechanical Engineering, University of California, Berkeley CA, March 11, 2015.
37. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Northwestern University, Chicago, IL, March 18, 2015.
38. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Northwestern University, Chicago, IL, March 19, 2015.
39. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Linkoping University, Linkoping Sweden, April 22, 2015.
40. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Lund Cardiac MR Group (Hjärt-MR-gruppen) | Medicinska fakulteten, Lunds Universitet, Lund Sweden, April 24, 2015.
41. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Leiden University Medical Center, Leiden, Netherlands, April 28, 2015.
42. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Institut für Didaktik der Physik, Munster, Germany, May 6, 2015.
43. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Universitätsklinikum Freiburg, Germany, May 7, 2015.
44. “Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Laboratory of Biological Structure Mechanics, Politecnico Di Milano, Milan, Italy, May 12, 2015.

45. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Faculty of Physics, University of Atherns, Athens, Greece, May 29, 2015.
46. “Aesthetics of Design.” Guest lecture presented at the GEEN 1400. M. Picket-May’s class, ITLL 160, February 8, 2016.
47. “FYFD Webcast #3: Aesthetics, Fluid Dynamics, and Engineering Education | FYFD on Patreon.” *Patreon*. With Katherine Good man and Nicole Sharp, 5/21/2016. https://www.youtube.com/watch?v=_Ph4xAqArqc
48. “Flow Vis and Beyond: The Power of Aesthetics in Engineering Education.” Seminar presented at the Mechanical Engineering Department Seminar, University of Texas, San Antonio, March 24, 2017.
49. “Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Dinner talk presented at the DOE Computer Graphics Forum, Table Mountain Inn, Golden CO, May 2, 2017.
50. “Vorticity for the Assessment of Right Ventricular Diastolic Dysfunction Using 4D Flow CMR.” Invited Seminar presented at the Fluid Dynamics Research Coalition Seminar, Penn State University, September 21, 2017. https://docs.google.com/document/d/1T_ifBd02w9KDoUAAuRnsJsYkCv0PjMwt95lgPTtctj0/edit?usp=embed_facebook.
51. “Velocity and Vorticity In The Right Human Heart from 4D MRI.” presented at the Applied Math Dynamical Systems seminar, ECOT 226 University of Colorado Boulder, March 1, 2018.
52. “It’s All Iteration: Teaching, Learning and Research.” presented at the ME PhD lunch, DLC, Dept Mech Engin CU Boulder, March 15, 2018.
53. “Everything is Art”, keynote speech for the Boettcher Scholars and the Norlin Scholars Special Undergraduate Enrichment Programs Conference, 4/21/2018.
54. "From Flow Visualization to Beauty, Power, Destruction and Oddness" ATLAS Graduate Seminar, October 16, 2018.
55. “What Good are Aesthetics?” Invited Minisymposium talk, 72nd Annual Meeting of the APS Division of Fluid Dynamics, November 23–26, 2019, Seattle, WA. Abstract published in Bulletin of the American Physical Society. Seattle, WA, United States: American Physical Society, 2019. http://meetings.aps.org/Meeting/DFD19/Session/H30.2.
56. “What Good are Aesthetics” Guest lecture in Rishi Raj’s Freshman Seminar, 11/6/19.
57. “A Braided Life” Guest lecture in Leland Giovanelli’s Women in Science course, 11/12/19.
58. “Ungrading, Self-Grading and Pass/Fail.” Workshop presented at the CTL Lunch & Share, Center for Teaching and Learning, CU Boulder, April 2, 2020. https://cuboulder.zoom.us/rec/share/wNdFDJfQ52VJa4Xt8EXxWowmTo3ZT6a80CkY-vFZxB5vFJp3uicY6bhRKRO-CZTV. Here is a link to a Google doc with notes and takeaways from the session
59. “Tools for Teaching Evaluation.” Invited panelist at the DU Transforming Teaching Evaluation Kickoff, University of Denver, CO, April 1, 2022.
60. “Aesthetics and Student Attitudes in Flow Visualization.” Invited presentation at the Perceiving Art: Physics Principles & Research Challenges, an NSF funded

workshop. Institut Henri Poincaré, Paris, France 2023. https://www.ihp.fr/en/news-research-activities/perceiving-art-physics-principles-research-challenges.

61. "Why Teach Art in Engineering" Invited seminar at Penn State, Feb 1, 2024.

Media Mentions

Ula Chrobak. "The Engineering Class Teaching Students To Make Art." Alumni Association, March 1, 2019. https://www.colorado.edu/coloradan/2019/02/11/flow-visualization-cu-boulder.

9news.com. "How Many Germs Are Spread When a Band Plays?" KUSA.com, July 24, 2020. https://www.9news.com/video/news/local/next/can-bands-spread-covid-19-while-playing/73-e93134c5-88f1-40f6-a38c-51dcea951541

Sharon Udasin. "Can Singing and Wind Instruments Be Made Safe during Coronavirus? Colorado Researchers Are Trying to Find Out." The Colorado Sun, July 30, 2020. https://coloradosun.com/2020/07/30/singing-band-instruments-coronavirus-cu-csu/.

Live stream presentation: Performing Arts Aerosol Study Preliminary Results 2, August 6, 2020. https://www.youtube.com/watch?v=qi4x5HDqWqs.

Kelsey Simpkins. "Aerosol Research Instrumental in Getting Musicians Back to Playing Safely," October 14, 2020. https://www.colorado.edu/today/2020/10/14/aerosol-research-instrumental-getting-musicians-back-playing-safely.

Interview with Kai Beecher, Scripps National News, 10/26/2020. Aired locally on Channel 7 Denver. "Critical Mention." https://app.criticalmention.com/app/#clip/view/12404d0d-b3bd-4696-aa94-ffacefd54189?token=b218136b-8b90-4aa4-9283-14a477ba9f6f

Knopper, Steve. "Vaxxed & Amped: Rehearsal Spaces Are Filling Up With Artists 'Dying to Play.'" *Billboard* (blog), May 7, 2021. https://www.billboard.com/pro/rehearsal-spaces-demand-artists-bands-vaccines-touring/.

Calli McMurray. "Can Pathogens at the Opera Haunt a Performance?" *Smithsonian Magazine*. November 22, 2022. https://www.smithsonianmag.com/science-nature/can-pathogens-at-the-opera-haunt-a-performance-180981165/.