

Curriculum Vitae

Jean R. Hertzberg

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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

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

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 232 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

Founder and Moderator, Flow Visualization Facebook Group, 2008 to present. Currently at 660 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:

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 Society of Mechanical Engineers
American Association of University Women
American Association of University Professors
Tau Beta Pi
Pi Tau Sigma

Honors and Awards

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

Research Grants

“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.

“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 – 8/31/2020.

“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.

“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.

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

“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.

“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

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

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.

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.

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.

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.

Principal Investigator, “Acquisition of a Particle Image Velocimetry System,” National Science Foundation, CTS 0114109, 11/1/2001-10/31/2003, \$82,000.

Principal Investigator, “Modeling of Mitral Flow Data,” Council on Research and Creative Work, CU Boulder, 2001, \$4,800.

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

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.

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

Co-Investigator, “Fluid Mechanics of Ventricular Filling,” Whitaker Foundation, 1998-2001, \$205,587

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

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

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

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

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

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

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

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

Student Supervision

PhD

Miles Abarr, Modeling Pumped Thermal Energy Storage with Waste Heat Harvesting (co-advised). Began Fall 2013, graduated May 2016. Currently with Bright Energy Storage Technologies.

James Browning, Analysis of 4DMRI Cardiac Flow Related to Pulmonary Hypertension. PhD, graduated May 2016. Currently Assistant Teaching Professor at Northeastern University College of Engineering.

Katherine Goodman, Aesthetics in Engineering Education. PhD Atlas program, started Fall 2013, graduated December 2015. Currently Assistant Professor, Inworks Program, University of Colorado, Denver.

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

James McNeill (co-advised) “Operating Room Air Flows” PhD ABD.

Natalie Ross (co-advised), “Point-Vortex Modeling of a Forced Planar Jet,” PhD May 2008. Currently at Principal Software Engineer at Oracle.

Rui Wang, (co-advised) “Right Ventricular Assist Device for Fontan Patients: Pump Design, Fabrication and Assessment,” December 2007.

Lingli Liu (co-advised), “Fabrication of Capacitative Micromachined Ultrasonic Transducers,” December 2007.

Hairong Zheng (co-advised), “Effect of Ultrasonic Waveform on Nonlinear Microbubble Response”, May 2006.

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

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

Craig Weinberg (co-advised), “Noninvasive Measurement of Pulmonary Vascular Resistance in Pediatric Pulmonary Hypertension,” Ph.D. student, co-advised by Robin Shandas, May 2003

Kevin Anderson (co-advised), “Simulation of Non-Premixed Actively Forced Reacting Vortical Structures Within a Confined Domain” Ph.D. student, co-advised by Shankar Mahalingam, May 1998.

Rom McGuffin (co-advised), “Combustion Instability in a Ramjet,” Ph.D. student, co-advised by John Daily, December 1996.

Tae Chang, “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 by Lupita Montoya.

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

Logan Williams, (co-advised) “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, “Stereomicroscopic Particle Image velocimetry” MS Thesis, co-advised with E. Bradley. 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 56 students.

Supervised undergraduate involvement in research via independent study and

UROP/URAP for 175 students.

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	
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	
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	30
	F 10	21
	F 11	23
MCEN 4228/5228 / ATLS 4518/5518 Special Topic: Aesthetics of Design. New course development	Maymester	34
	14	
	S 16	52
	S 17	52
MCEN 5021 Fluid Mechanics: Lecture	F 96	12
	F 16	27
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-present. 20 hour workshop for 10 to 20 STEM postdocs from across the campus on teaching techniques.
 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 – present
 Faculty Teaching Excellence Program as Faculty Associate 2008-
 Campus representative to, and founding member of the Colorado Alliance on Bioengineering, 1998-2002

College

ATLAS Faculty Affiliate/Fellow January 2018
 ATLAS Faculty Search Committee, Spring 2016
 Co-Organizer for the First and Second CEAS Education Retreats. Duties included setting agenda, publicity, selecting venue, food and staffing.
 College Undergraduate Education Council, 2002-2006, 2008-
 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

Developed and presented the Evidence Based Introduction to Teaching (EBIT) workshop 2016
 Mechanical Engineering Assessment and Curriculum Subcommittee Member 2012- 2016
 Mechanical Engineering Graduate Committee Fall 2016
 Mechanical Engineering Assessment and Curriculum Subcommittee Chair 2009-2011.
 Mechanical Engineering ABET Committee Chair, 2004-2005.
 Mechanical Engineering Undergraduate Committee Chair, 2002-2006, 2008-2009
 Mechanical Engineering Executive Committee 2002-2006, 2007-2011
 Mechanical Engineering Undergraduate Committee, 1994-1996, 2001-2002.

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 Graduate Committee, 1991-1992.
Mechanical Engineering Facilities Committee, 1992-1994.
Undergraduate Initiative Fund Department Administrator, 1994-present.
ME Department Computer Network Administrator, 1993-1998.
ME Women's Network Facilitator, 1993-2002.
Implemented the "Teamwork and Leadership Program" for M.E. freshmen, 1992-1994.
Faculty Advisor for Pi Tau Sigma (Mechanical Engineering Honor Society), 1994-present.
Panelist for the Faculty Teaching Excellence Program, 1993.
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- present.
"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.
"Kinetics For Kids". K-12 Physics Teacher Workshop, 1999, 2001.
Women in Engineering Career Day, 1994,1996-1998, 2003, 2005.
WIEP Energy Education Workshop 1999.
Engineering Open House, 1991, 1992, 1994.
Engineering Orientation, 1993, 1998, 1999-2005.
Engineering Career Day, 1993, 1994.
High School Honors Institute, 1993, 2006.
Judge, California State Science Fair, 1988.
Judge, Boulder Valley Regional Science Fair, 2002.

Archival Publications

J. Hertzberg, M. Namazian and L. Talbot, "A Laser Tomographic Study of the Interaction of a Flame and a Karman Vortex Street," *Combustion, Science and Technology*, **38**, pp.205-216,1984.

P. Cho, C.K. Law, J. Hertzberg and R. Cheng “ Structure and Propagation of Turbulent Premixed Flames Stabilized in a Stagnation Flow,” *Twenty First Symposium (International) on Combustion*, Combustion Institute, 1986.

I.G. Shepherd, J.R. Hertzberg, L. Talbot, “Flame Holding in Unconfined Turbulent Premixed Flames.” Paper presented at ICASE Workshop on Supersonic Combustion, NASA Langley, VA, Oct. 1989. Later published in *Major Research Topics in Combustion*, M.Y. Hussaini, A. Kumar, R.G. Voight, Editors. Springer-Verlag, New York, 1992.

J. Hertzberg, I. Shepherd, L. Talbot, “Vortex Shedding Behind Rod Stabilized Flames,” *Combustion and Flame*, **86**, pp. 1-11, 1990.

J. Hertzberg and C.M. Ho, “Time-Averaged Three-Dimensional Flow in a Rectangular Sudden Expansion,” *AIAA Journal*, **30** (10), pp. 2420-2425, errata **30**(11), pp. 2803, 1992.

J. Hertzberg and C.M. Ho, “Vortex Dynamics in a Rectangular Sudden Expansion,” *Journal of Fluid Mechanics*, **289**, pp. 1-27, 1995.

K. Anderson, J. Hertzberg and S. Mahalingam, “Classification of Absolute and Convective Instabilities in a Bluff Body Stabilized Flame,” *Combustion Science and Technology* **116**, pp. 257-269, 1996.

T.Y. Chang, J. Hertzberg, R. Kerr, “Three-Dimensional Vortex Wall Interaction: Entrainment in Numerical Simulation and Experiment,” *Physics of Fluids* **9** (1) pp. 57-66, January 1997.

J. Hertzberg, “Conditions for a Split Diffusion Flame,” *Combustion and Flame*, Vol. 109, pp 314-322, 1997.

J. Hertzberg, J. Carlton, E. Davis, M. Linne, “Splitting of Forced Elliptic Jets and Flames,” *Journal of Image Processing and Flow Visualization*, Vol. 5, pp.155-165, 1998.

J.D. Luff, A.M. Rompage, M.A. Linne and J.R. Hertzberg, “Experimental Uncertainties Associated with Post-Processing of Particle Image Velocimetry (PIV) Based Algorithms,” *Experiments in Fluids*, **26**, pp. 36-54, 1999.

K. R. Anderson, S. Mahalingam and J. Hertzberg, “A Two-Dimensional Planar Computational Investigation of Flame Broadening in Confined Non-Premixed Jets,” *Combustion and Flame*, **118**, pp. 233-247, 1999.

C.G. DeGroff, S. Bhatikar, J. Hertzberg, R. Shandas, L. Valdes-Cruz, R. Mahajan. Use of artificial neural networks to discriminate between innocent and pathological murmurs. <http://circ.ahajournals.org/cgi/content/abstract/103/22/2711>. *Circulation*, **103**(22), pp. 2711, 2000.

- R. Shandas, C. Weinberg, E. Nicol, D.D. Ivy, C. DeGroff, J. Hertzberg, L.M. Valdes-Cruz. "Development Of A Non-Invasive Ultrasound Color M-Mode Means Of Estimating Pulmonary Vascular Resistance In Pediatric Pulmonary Hypertension: Numerical Analysis", *In vitro Validation and Preliminary Clinical Studies, Circulation*, **104**, pp. 908-913, 2001.
- C. Weinberg, J. R. Hertzberg, R. Shandas "Utility of Intravascular Ultrasound to Measure Local Compliance of the Pediatric Pulmonary Artery: In Vitro Studies" *Journal of the American Society of Echocardiography* **15** (12) pp. 1507-1514, 2002.
- J. Cooke, J.R. Hertzberg, M. Boardman, R. Shandas, "Characterizing Vortex Ring Behavior During Ventricular Filling with Doppler Echocardiography: An In Vitro Study" *Annals of Biomedical Engineering*. **32**(2), pp. 245-256, 2004.
- T. Peacock, E. Bradley, J. Hertzberg, Y.C. Lee, "Forcing a planar jet flow using MEMS," *Experiments in Fluids*, Vol. 37(1), pp. 22-28, 2004.
- Zichun Ma, Elizabeth Bradley, Thomas Peacock, Jean R Hertzberg, Yung-Cheng Lee, "Solder-Assembled Large MEMS Flaps for Fluid Mixing" *IEEE Transactions on Advanced Packaging*, Vol 26, no. 3, August 2003, pp 268-276.
- H.-B. Kim, J. R. Hertzberg and R. Shandas, "Development and Validation of Echo PIV", *Experiments in Fluids*, ISSN:0723-4864, DOI: 10.1007/s00348-003-0743-5. Issue: Online First, Nov. 2003. Hardcopy Vol. 36(3), pp. 455-462, 2004.
- Carlson, L.E , Reitsma, R.F., Brandemuehl, M.J., Hertzberg, J.R., Sullivan, J.F. and Gabbard, S.G., (2003), Exploiting an Engineering *Building* as a Unique Distance Learning Tool, *International Journal of Engineering Education*. Vol. 19(3), pp. 379-388.
- Birnbaum B, Orlando, W., Shandas R., Hertzberg J., DeGroff, C., , "Oscillatory events with steady flow boundary conditions in numerical simulations of the Fontan operation.," *Journal Of Investigative Medicine* 52, no. 1 (January 2004): S170-S170.
- Hyoung-Bum Kim, Jean Hertzberg, Craig Lanning, Robin Shandas, "Non-invasive measurement of steady and pulsating velocity profiles and shear rates in arteries using echo PIV: In vitro validation studies," *Annals of Biomedical Engineering*, **32** (8): 1067-1076, August 2004.
- J.R. Hertzberg and A. Sweetman, "A Course in Flow Visualization: the Art and Physics of Fluid Flow," 2004 ASEE Annual Conference Proceedings (reviewed), pp. 2449-2459. Session # 2480. "Best Paper of PIC III" \$1000 award
<http://www.colorado.edu/MCEN/flowvis/ASEEPaper.pdf>.
- Mukdadi, O.M.; Hyoung-Bum Kim; Hertzberg, J.; Shandas, R., "Numerical modeling of microbubble backscatter to optimize ultrasound particle image velocimetry imaging: initial studies," *Ultrasonics*, **42** (10), pp. 1111-21, 2004.

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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>.

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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.

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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>.

Invited Seminars and Papers

“Fluid Mechanics of Flame Stabilization,” Brown University, Providence R.I., October 1986.

“Flame Anchoring in Premixed Flames” University of Washington, Seattle, WA, October 1986.

“Vortex Shedding in Rod Stabilized Flames” University of Southern California, L.A. CA, October 1986.

“Vortex Shedding in Rod Stabilized Flames” California Institute of Technology, Pasadena, CA, January 1987.

“Vortex Dynamics in an Asymmetric Sudden Expansion” California Polytechnic State University, San Luis Obispo, CA, May 1990.

“Vortex Dynamics in an Asymmetric Sudden Expansion” University of Colorado, Boulder, CO, May 1990.

“Behavior of Confined Shear Layers in a Rectangular Sudden Expansion” Cornell University, Ithaca, NY, August 1990.

“Behavior of Confined Shear Layers in a Rectangular Sudden Expansion” Arizona State University, Tempe, AZ, September 1990.

“Phase-Locked Three-Dimensional Flow in a Rectangular Sudden Expansion,” Colorado School of Mines, Golden, CO, April 1993.

“Combustion Fluid Mechanics” Talk for ASME CU Boulder student chapter. February 1997.

“Split Jets and Flames in Microgravity,” NASA Lewis, Cleveland OH, October 1997.

“Cardiac Fluid Dynamics,” CU Boulder student chapter of the Biomedical Engineering Society, April 2001.

“Modeling Mitral Flow Data,” Applied Mathematics Colloquium, Tuesday February 4, 2003, CU Boulder.

“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

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.

"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

“A Course in Flow Visualization: the Art and Physics of Fluid Flow” Physics Education Research group meeting, Oct. 2005.

“Beautiful Physics From Ordinary Fluids” Guest lecture in MCEN 3021, 9/28/2006.

“Beautiful Physics From Ordinary Fluids” Sigma Xi invited talk, 11/6/2006.

“Beautiful Physics From Ordinary Fluids” TERC invited talk, 1/17/2007.

“Beautiful Physics From Ordinary Fluids” Applied Math Dept Seminar, CU Boulder, 2/16/2007.

“Beautiful Physics From Ordinary Fluids” Aerospace Engineering Dept Seminar, University of Washington, 3/5/2007.

“Beautiful Physics From Ordinary Fluids” Invited Seminar at University of Wyoming, Laramie, 3/6/2008.

“Introduction to Flow Visualization” Building Systems Seminar, CU Boulder 10/9/2008.

“Impact and Outcomes of a Flow Visualization Course” Physics Education Research group meeting, August 2009.

“Impact and Outcomes of a Flow Visualization Course” Fluids Connections (Dept. Mechanical Engineering, CU Boulder) group meeting, November 2010.

“Art for the Sake of Improving Engineering Education” CU Engineering Education Research Group meeting, November 2011.

“The Psychology of Praise”, Tau Beta Pi initiation dinner, 4/15/2012.

“The Aesthetics of Beauty, Power and Destruction,” APS DFD Special Session on Media Communications, San Diego, California USA, 18-Nov-2012

“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.

“Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar presented at the Fluids Seminar Series, University of Colorado, Boulder, September 3, 2013.

“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.

“Becoming an Engineering Education Researcher.” Seminar presented at the ATLAS Graduate Seminar, University of Colorado, Boulder, October 3, 2014.

“Aesthetics of Flow Visualization: Art in Engineering.” Presentation/Workshop presented at the Graduate Teacher Program Friday Forum, University of Colorado, Boulder, October 10, 2014.

“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.

“Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Dept. Mechanical Engineering, University of California, Berkeley CA, March 11, 2015.

“Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Northwestern University, Chicago, IL, March 18, 2015.

“Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Northwestern University, Chicago, IL, March 19, 2015.

“Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Linköping University, Linköping Sweden, April 22, 2015.

“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.

“Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Leiden University Medical Center, Leiden, Netherlands, April 28, 2015.

“Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Institut für Didaktik der Physik, Munster, Germany, May 6, 2015.

“Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart.” Seminar, Universitätsklinikum Freiburg, Germany, May 7, 2015.

“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.

“Beauty, Power, Destruction and Oddness: The Aesthetics of Flow Visualization.” Seminar, Faculty of Physics, University of Athens, Athens, Greece, May 29, 2015.

“Aesthetics of Design.” Guest lecture presented at the GEEN 1400. M. Picket-May’s class, ITLL 160, February 8, 2016.

“FYFD Webcast #3: Aesthetics, Fluid Dynamics, and Engineering Education | FYFD on Patreon.” *Patreon*. With Katherine Goodman and Nicole Sharp, 5/21/2016.

https://www.youtube.com/watch?v=_Ph4xAqArqc

“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.

“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.

“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.