

ONE-PAGE SUMMARY

Wangda Zuo, Ph.D.

Date: January 17, 2019

Education:

- Ph. D. (2010) Purdue University
- M. Sc. (2005) Friedrich-Alexander-University Erlangen-Nuremberg, Germany
- M. Eng. (2003) and B. Sc. (2000) Chongqing University, China

Fields of Interests:

- Smart, Sustainable, and Resilient City
- Building and District Energy Systems
- Indoor Environment Modeling
- Building Controls Design and Optimization

Current Position:

Associate Professor, Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder

Major Professional Services:

- Treasurer and Affiliate Director* of International Building Performance Simulation Association (IBPSA)
- Chair, Vice-Chair, Secretary, Subcommittee Chair and Voting Member* of various ASHRAE committees
- Founding Chair* of IBPSA-USA Research Committee

Major Honors and Awards:

- Lewis-Worcester Faculty Fellow*, College of Engineering, CU Boulder, 2017-2020
- Distinguished Service Award*, ASHRAE, 2017
- Eliahu I. Jury Early Career Research Award*, College of Engineering, University of Miami, 2016
- SEEDS You Choose Leadership Award*, University of Miami, 2013, 2014, 2015, 2016
- Emerging Professional Award* in recognition of superior early achievement in the field of energy modeling, IBPSA-USA, 2016
- Provost Research Award*, University of Miami, 2014
- Best Poster Award*, IBPSA-USA Winter Meeting, Chicago, IL, 2009

Publications:

- Google Scholar Profile (Citations: 1056; h-index: 17; i10-index: 25)
- Journal Papers: 31
- Peer Reviewed Conference Papers: 49
- Invited Talks: 44

Sponsored Research Projects:

- \$2.26M (Zuo's responsibility: \$2.01M)
- 21 projects funded by NSF, DOE, DOD, DHS, CERC, ASHRAE, Chase, Delos, and etc.

Major Subjects Taught:

- Building Energy Modeling and Simulation
- Sustainable Construction
- Indoor Environment Modeling

Supervisees:

<i>Summary</i>	<i>Total</i>	<i>Completed</i>	<i>In Progress</i>
Ph.D. Students	10	2	8
M.S. & B.S. Students	23	19	4
Visiting Scholars/Students	10	9	1

Wangda Zuo

Date: January 17, 2019

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Principle Fields of Interests

Smart, Sustainable, and Resilient City; Building and District Energy Systems; Indoor Environment Modeling; Building Controls Design and Optimization

Education

Ph. D. (05/2010) Mechanical Engineering, Purdue University, USA

M. Sc. (07/2005) Computational Engineering, Friedrich-Alexander-University Erlangen-Nuremberg, Germany

M. Eng. (06/2003) Automation, Chongqing University, China

B. Sc. (07/2000) Automation, Chongqing University, China

Experience

<i>Institution</i>	<i>Position</i>	<i>Beginning</i>	<i>Ending</i>
Buildings and Thermal Systems Center, National Renewable Energy Laboratory, USA	Joint Appointment	03/2018	-
Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, USA	Associate Professor	08/2017	-
Department of Civil, Architectural and Environmental Engineering, University of Miami, USA	Adjunct Professor	08/2017	-
Center for Computational Science, University of Miami, USA	Member	09/2016	08/2017
Center for Urban & Community Design, University of Miami, USA	Member	03/2016	08/2017
Department of Civil, Architectural and Environmental Engineering, University of Miami, USA	Assistant Professor	01/2013	08/2017
Environmental Energy Technology Division, Lawrence Berkeley National Laboratory (LBNL), USA	Research Scientist	03/2011	12/2012
Environmental Energy Technology Division, Lawrence Berkeley National Laboratory, USA	Post-Doctoral Fellow	05/2010	03/2011
School of Mechanical Engineering, Purdue University, USA	Graduate Research Assistant	08/2006	04/2010
German Aerospace Center, Germany	Researcher	09/2005	08/2006
University Erlangen-Nuremberg, Germany	Research Assistant	05/2004	02/2005
Automation and Drives Group, Siemens AG, Germany	Intern	07/2003	10/2004
Automation and Drives Group (A&D), Siemens Ltd., China	Intern	12/2001	07/2002

Teaching Record

<i>Term</i>	<i>Subject No.</i>	<i>Subject Title</i>	<i>Role</i>
2018 Fall	AREN4890/5890	Sustainable Building Design	Instructor
2018 Spring	AREN4317	Architectural Engineering Design	Co-Instructor
2018 Spring	AREN2120	Fluid Mechanics and Heat Transfer	Instructor
2017 Fall	AREN3010	Mechanical Systems for Buildings	Co-Instructor
2017 Fall	AREN4890/5890	Sustainable Building Design	Instructor
2017 Spring	CAE781	Advanced Building Energy Modeling	Instructor
2017 Spring	CAE560/660	Sustainable Construction	Instructor

2016 Fall	CAE780	Indoor Environment Modeling	Instructor
2016 Spring	CAE560/660	Sustainable Construction	Instructor
2015 Fall	CAE790-T	Modeling and Simulation of Building Energy and Control System	Instructor
2015 Spring	CAE560	Sustainable Construction	Instructor
2014 Fall	CAE680	Indoor Environment Modeling	Instructor
2014 Spring	CAE560	Sustainable Construction	Instructor
2013 Fall	CAE690-T	Advanced Modeling of Hybrid Systems in Buildings	Instructor
2013 Fall	CAE690-01	Data Analysis and Visualization for Building Systems	Instructor
2013 Spring	CAE560	Sustainable Construction	Instructor

Sponsored Research

Total: \$2.26M (Zuo's responsibility: \$2.01 M)

	<i>Project Title</i>	<i>Sponsor</i>	<i>Role</i>	<i>Amount (\$)</i>
21.	Comprehensive Pliant Permissive Priority Optimization (01/19-09/20)	Department of Energy via PNNL	PI	150,000
20.	Statistical Analysis of Pre-Occupancy and Post-Occupancy Survey for a WELL Certified Building (10/18-01/19)	Delos Living LLC	PI	3,995
19.	Planning IUCRC at University of Colorado Boulder: Center for Building Energy Smart Technologies (BEST) (Award No. 1822156; 09/18-08/19)	National Science Foundation	Co-PI	15,000
18.	An Innovative Computational Platform for Robust and Optimal Operation of Renewable Energy Cities (Award No. 22-2018; 09/18-08/19)	Colorado Energy Research Collaboratory	PI	50,000
17.	1661-TRP, Development of Near-Optimal Control Sequence for Chiller Plants with Water Side Economizer Using Dynamic Models (08/17-04/20)	ASHRAE	PI	116,560
16.	CRISP Type 1: Collaborative Research: A Human-Centered Computational Framework for Urban and Community Design of Resilient Coastal Cities (Award No. ACI-1638336; 01/17-12/19)	National Science Foundation	Co-PI	299,579
15.	Improving Data Center Energy Efficiency through End-To-End Cooling Modeling and Optimization (Award No. DE-EE0007688; 10/16-11/19)	Department of Energy	PI	522,460
14.	Building to Grid Integration in a Smart City (10/16-08/17)	University of Miami	PI	2,500
13.	BIGDATA: Collaborative Research: IA: Big Data Analytics for Optimized Planning of Smart, Sustainable, and Connected Communities (Award No. IIS-1633338, 9/16-8/17; IIS-1802017, 8/17-8/19)	National Science Foundation	PI	443,867
12.	Fast Simulation of Dense Gas Transportation in Buildings Using Cross-Platform Parallel Computing (07/16-08/17)	Department of Homeland Security via LBNL	PI	25,000

11.	Model-based Controls Optimization for a Data Center Cooling System (04/16-12/16)	JPMorgan Chase	PI	40,000
10.	1771-TRP, Energy Modeling of Typical Commercial Buildings in Support of ASHRAE Building Energy Quotient Energy Rating Program (04/16-03/20)	ASHRAE	PI	199,395
9.	Living Campus Energy Laboratory (06/15-05/16)	University of Miami	PI	2,500
8.	Development of a Fast Model for Predicting Dense Gas Transportation in Buildings (02/15-12/15)	Department of Homeland Security via LBNL	PI	25,000
7.	Research Exchange in Building Energy Modeling (09/14-07/15)	University of Miami	PI	2,500
6.	Development and Demonstration of a Scalable Indoor Environment Model for Model Predictive Control of Energy Efficient Building Ventilation (06/14-05/15)	University of Miami	PI	16,071
5.	Developing Model-Based Fault Detection and Diagnostic for the Energy Efficient Building System Operation (01/14-09/14)	University of Miami	PI	2,500
4.	Implementation and Validation of Modelica Based Models for a Large Chiller Plant System (01/13-09/16)	Department of Defense via LBNL	PI	120,001
3.	Coupling Fast Fluid Dynamics and Modelica Buildings Library for Integrated Simulation of Indoor Environment and HVAC Systems (01/13-09/13)	Department of Energy via LBNL	PI	30,100
2.	Demonstration of a Modelica-Based Tool Chain for Rapid Prototyping and Evaluation of Integrated Building Controls (02/12-01/13)	Department of Energy through Consortium for Building Energy Innovation	Co-PI	188,700
1.	Fast Simulation of Contaminant Transportation in Buildings (07/09-06/10)	Chongqing University	PI	8,823

Received Industrial Gift

- J. Cumpton, \$1000, 12/31/2014.
- Costal Construction of M.D. County, Inc, \$4000, 10/24/2013.

Publications

Symbols: Underline: Current and former students; *Italic*: Visiting scholars;

Journal Papers

31. Y. Ye, W. Zuo, G. Wang, “A Comprehensive Review of Energy-Related Data for U.S. Commercial Buildings.” Accepted by *Energy and Buildings*.
30. Y. Fu, **W. Zuo**, M. Wetter, J. VanGilder, X. Han, D. Plamondon. “Equation-based Object-Oriented Dynamic Modeling and Simulation for Data Center Cooling System: A Case Study in Massachusetts.” Accepted by *Energy and Buildings*.
29. J. Wang, **W. Zuo**, L. Rhode-Barbarigos, X. Lu, J. Wang, Y. Lin 2019. “Literature Review on Modeling and Simulation of Energy Infrastructures from a Resilience Perspective.” *Reliability Engineering and System Safety*, 183, pp. 360-373. DOI: 10.1016/j.ress.2018.11.029.
28. S. Huang, **W. Zuo**, H. Lu, C. Liang, X. Zhang 2019. “Performance Comparison of A Heating Tower Heat Pump and An Air-source Heat Pump: A Comprehensive Modeling and Simulation Study.” *Energy Conversion and Management*, 180, pp. 1039-1054. DOI: 10.1016/j.enconman.2018.11.050.
27. S. Huang, W. Wang, M. Brambley, S. Goyal, **W. Zuo** 2018. “An Agent-based Hardware-in-the-loop Simulation Framework for Building Controls.” *Energy and Buildings*, 181, pp. 26-37. DOI: 10.1016/j.enbuild.2018.09.038.
26. G. Zhou, Y. Ye, **W. Zuo**, X. Zhou, X. Wu 2018. “Fast and Efficient Prediction of Finned-Tube Heat Exchanger Performance using Wet-Dry Transformation Method with Nominal Parameters.” *Applied Thermal Engineering*, 145, pp. 133-146. DOI: 10.1016/j.applthermaleng.2018.09.020.
25. Q. Wang, Yiqun Pan, Y. Fu, Z. Huang, **W. Zuo**, P. Xu 2018. “A Simulation-based Method for Air Loop Balancing and Fan Sizing Using Uncertainty and Sensitivity Analysis.” *Building Simulation*. DOI: 10.1007/s12273-018-0471-7.
24. G. Zhou, Y. Ye, J. Wang, **W. Zuo**, Y. Fu, X. Zhou 2018. “Modeling Air-to-Air Plate-Fin Heat Exchanger without Dehumidification.” *Applied Thermal Engineering*, 143, pp. 137-148. DOI: 10.1016/j.applthermaleng.2018.07.064.
23. W. Tian, X. Han, **W. Zuo**, M. D. Sohn 2018. “Building Energy Simulation Coupled with CFD for Indoor Environment: A Critical Review and Recent Applications.” *Energy and Buildings*, 165, pp.184-199. DOI: 10.1016/j.enbuild.2018.01.046.
22. S. Huang, **W. Zuo**, M. D. Sohn 2018. “A Bayesian Network Model for Predicting Cooling Load of Commercial Buildings.” *Building Simulation*, 11(1), pp. 87-101. DOI: 10.1007/s12273-017-0382-z.
21. W. Tian, T. A. Sevilla, D. Li, **W. Zuo**, M. Wetter 2018. “Fast and Self-Learning Indoor Airflow Simulation Based on In Situ Adaptive Tabulation.” *Journal of Building Performance Simulation*, 11(1), pp. 99-112. DOI: 10.1080/19401493.2017.1288761.
20. S. Huang, A. Malara, **W. Zuo**, M. D. Sohn 2018. “A Bayesian Network Model for the Optimization of a Chiller Plant’s Condenser Water Set Point.” *Journal of Building Performance Simulation*, 11(1), pp. 36-47. DOI: 10.1080/19401493.2016.1269133.
19. Q. Wang, Y. Pan, M. Zhu, Z. Huang, W. Tian, **W. Zuo**, X. Han, P. Xu 2017. “A State-Space Method for Real-Time Transient Simulation of Indoor Airflow.” *Building and Environment*, 126, pp. 184-194. DOI: 10.1016/j.buildenv.2017.09.032.
18. W. Tian, T. A. Sevilla, **W. Zuo**, M. D. Sohn 2017. “Coupling Fast Fluid Dynamics and Multizone Airflow Models in Modelica Buildings Library to Simulate the Dynamics of HVAC Systems.” *Building and Environment*, 122, pp. 269-286. DOI: 10.1016/j.buildenv.2017.06.013.
17. S. Huang, **W. Zuo**, M. D. Sohn 2017. “Improved Cooling Tower Control of Legacy Chiller Plants by Optimizing the Condenser Water Set Point.” *Building and Environment*, 111, pp. 33-46. DOI: 10.1016/j.buildenv.2016.10.011.
16. W. Tian, T. A. Sevilla, **W. Zuo** 2017. “A Systematic Evaluation of Accelerating Indoor Airflow Simulations Using Cross-Platform Parallel Computing.” *Journal of Building Performance Simulation*, 10(3), pp. 243-255. DOI: 10.1080/19401493.2016.1212933.

15. S. Huang, **W. Zuo**, M. D. Sohn 2016. “Amelioration of the Cooling Load Based Chiller Sequencing Control.” *Applied Energy*, 168, pp. 204-215. DOI: 10.1016/j.apenergy.2016.01.035.
14. **W. Zuo**, M. Wetter, W. Tian, D. Li, M. Jin, Q. Chen 2016. “Coupling Indoor Airflow, HVAC, Control and Building Envelope Heat Transfer in the Modelica Buildings Library.” *Journal of Building Performance Simulation*, 9(4), pp. 366-381. DOI: 10.1080/19401493.2015.1062557.
13. G. Shao, T. Li, **W. Zuo**, S. Wu, T. Liu 2015. “A Combinational Clustering Based Method for cDNA Microarray Image Segmentation.” *PLoS one*, 10(8), pp.1-23. DOI: 10.1371/journal.pone.0133025.
12. M. Wetter, **W. Zuo**, T. S. Noudui, X. Pang 2014. “Modelica Buildings Library.” *Journal of Building Performance Simulation*, 7(4), pp. 253-270. DOI: 10.1080/19401493.2013.765506.
11. T. S. Noudui, M. Wetter, **W. Zuo** 2014. “Functional Mock-Up Unit for Co-Simulation Import in EnergyPlus.” *Journal of Building Performance Simulation*, 7(3), pp. 192-202. DOI: 10.1080/19401493.2013.808265.
10. **W. Zuo**, A. McNeil, M. Wetter, E. S. Lee 2014. “Acceleration of the Matrix Multiplication of Radiance Three Phase Daylighting Simulations with Parallel Computing on Heterogeneous Hardware of Personal Computer.” *Journal of Building Performance Simulation*, 7(2), pp. 152-163. DOI: 10.1080/19401493.2013.795193.
9. M. Jin, **W. Zuo**, Q. Chen 2013. “Simulating Natural Ventilation in and around Buildings by Fast Fluid Dynamics.” *Numerical Heat Transfer, Part A: Applications*, 64(4), pp. 273-289. DOI: 10.1080/10407782.2013.784131.
8. M. Jin, **W. Zuo**, Q. Chen 2012. “Improvements of Fast Fluid Dynamics for Simulating Air Flow in Buildings.” *Numerical Heat Transfer, Part B Fundamentals*, 62(6), pp. 419-438. DOI: 10.1080/10407790.2012.724988.
7. **W. Zuo**, M. Jin, Q. Chen 2012. “Reduction of Numerical Diffusion in FFD Model.” *Engineering Applications of Computational Fluid Mechanics*, 6(2), pp. 234-247. DOI: 10.1080/19942060.2012.11015418.
6. **W. Zuo**, Q. Chen 2010. “Simulations of Air Distributions in Buildings by FFD on GPU.” *HVAC&R Research*, 16(6), pp. 785-798. DOI: 10.1080/10789669.2010.10390934.
5. **W. Zuo**, J. Hu, Q. Chen 2010. “Improvements in FFD Modeling by Using Different Numerical Schemes.” *Numerical Heat Transfer, Part B: Fundamentals*, 58(1), pp. 1-16. DOI: 10.1080/10407790.2010.504694.
4. **W. Zuo**, Q. Chen 2010. “Fast and Informative Flow Simulations in a Building by Using Fast Fluid Dynamics Model on Graphics Processing Unit.” *Building and Environment*, 45(3), pp. 747-757. DOI: 10.1016/j.buildenv.2009.08.008.
3. **W. Zuo**, Q. Chen 2009. “Real-Time or Faster-Than-Real-Time Simulation of Airflow in Buildings.” *Indoor Air*, 19 (1), pp. 33-44. DOI: 10.1111/j.1600-0668.2008.00559.x.
2. V. Kumar, B. Frohnafel, J. Jovanovic, M. Breuer, **W. Zuo**, I. Hadzic, R. Lecher 2009. “Anisotropy Invariant Reynolds Stress Model of Turbulence (AIRSM) and Its Application to Attached and Separated Wall-Bounded Flows.” *Flow, Turbulence and Combustion*, 83(1), pp. 81-103. DOI: 10.1007/s10494-008-9190-y.
1. **W. Zuo**, T. Yang, W. Zou 2004. “Updating Traditional CRM System by Terminal Server.” *Journal of Chongqing University (Natural Science Edition, in Chinese)*, 27(1), pp. 94-95. DOI: 10.11835/j.issn.1000-582X.2004.01.025.

Peer Reviewed Conference Papers

49. Y. Fu, S. Huang, D. Vrabie, **W. Zuo** 2019. “Coupling Power System Dynamics and Building Dynamics to Enabling Building-to-Grid Integration”. *Accepted by the 13th International Modelica Conference*, March 4-6, Regensburg, Germany.
48. Y. Fu, X. Lu, **W. Zuo** 2019. “Modelica Models for the Control Evaluations of Chilled Water System with Waterside Economizer”. *Accepted by the 13th International Modelica Conference*, March 4-6, Regensburg, Germany.
47. W. Tian, J.W. VanGilder, X. Han, C.M. Healey, M.B. Condor, **W. Zuo** 2019. “A New Fast Fluid Dynamics Model for Data-Center Floor Plenums”. *ASHRAE 2019 Winter Conference*, January 12-16, Atlanta, GA.
46. Q. Wang, Y. Pan, Z. Huang, **W. Zuo**, P. Xu 2018 “A Case Study of Simulation-Based PID Tuning Method for A Room Temperature Controller using Uncertainty Analysis”. *The 4th Asia Conference of International Building Performance Simulation Association - ASim2018*, December 3-5, Hong Kong, China.

45. Y. Fu, M. Wetter, **W. Zuo** 2018. "Modelica Models for Data Center Cooling Systems." *2018 ASHRAE Building Performance Analysis Conference and SimBuild (BPACS 2018)*, pp. 438-445, September 26-28, Chicago, IL.
44. Y. Ye, G. Wang, **W. Zuo**, P. Yang, K. Joshi 2018. "Development of a Baseline Building Model of Auto Service and Repair Shop." *2018 ASHRAE Building Performance Analysis Conference and SimBuild (BPACS 2018)*, pp. 573-580, September 26-28, Chicago, IL.
43. X. Lu, Y. Fu, **W. Zuo** 2018. "Modeling of Smart Community Infrastructure Accounting for the Interdependencies among Energy, Transportation and Communication Networks." *2018 ASHRAE Building Performance Analysis Conference and SimBuild (BPACS 2018)*, pp. 250-257, September 26-28, Chicago, IL.
42. W. Tian, Y. Fu, Q. Wang, T. A. Sevilla, **W. Zuo** 2018. "Optimization on Thermostat Location in an Office Room Using the Coupled Simulation Platform in Modelica Buildings Library: A Pilot Study." *Proceedings of the 4th International Conference on Building Energy and Environment (COBEE2018)*, pp. 569-574, February 5-9, Melbourne, Australia.
41. Y. Ye, G. Wang, **W. Zuo** 2018. "Creation of a Prototype Building Model of College and University Building." *Proceedings of the 4th International Conference on Building Energy and Environment (COBEE2018)*, pp. 373-378, February 5-9, Melbourne, Australia.
40. G. Zhou, Y. Ye, **W. Zuo**, X. Zhou 2018. "Modelling Air-To-Air Plate-Fin Heat Exchanger without Condensation." *Proceedings of the 4th International Conference on Building Energy and Environment (COBEE2018)*, pp. 597-602, February 5-9, Melbourne, Australia.
39. T. A. Sevilla, W. Tian, Y. Fu, **W. Zuo** 2018. "Low-Cost Acoustic Sensor Array for Building Geometry Mapping Using Echolocation for Real-Time Building Model Creation." *Proceedings of the 4th International Conference on Building Energy and Environment (COBEE2018)*, pp. 323-328, February 5-9, Melbourne, Australia.
38. G. Zhou, Y. Ye, **W. Zuo**, X. Zhou 2017. "Modelling Water-Cooled Air Coolers under Wet-Cooling Conditions. (in Chinese)" *Proceedings of the Chinese National Conference on HVAC Modeling*, December 6-8, Guangzhou, China.
37. W. Tian, **W. Zuo**, T. A. Sevilla, M. D. Sohn 2017. "Coupled Simulation between CFD and Multizone Models Based on Modelica Buildings Library to Study Indoor Environment Control." *Proceedings of the 12th International Modelica Conference*, pp. 55-61, May 15-17, Prague, Czech Republic. DOI: 10.3384/ecp1713255.
36. D. He, S. Huang, **W. Zuo**, R. Kaiser 2016. "Demo Abstract: a Virtual Testbed for Net Zero Energy Communities." *Proceedings of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2016)*, pp. 211-212, November 16-17, Palo Alto, CA. DOI: 10.1145/2993422.2996396.
35. R. Sterling, T. Mueller, A. Andriamamonjy, A. Giretti, M. Bonvini, Z. O'Neill, M. Wetter, M. V. Cavey, A. Costa, G. Boehme, **W. Zuo**, R. Klein, B. Dong, M. M. Keane 2016. "IEA Annex 60 Activity 2.3: Model Use during Operation, Approach and Case Studies." *Proceedings of the 3rd IBPSA-England Conference BSO 2016*, September 12-14, Newcastle, UK.
34. D. Li, W. Tian, **W. Zuo**, M. Wetter 2016. "Simulation Using In Situ Adaptive Tabulation and Fast Fluid Dynamics." *Proceedings of the ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference*, pp. 65-71, August 8-12, Salt Lake City, UT.
33. D. He, S. Huang, **W. Zuo**, R. Kaiser 2016. "Towards to the Development of Virtual Testbed for Net Zero Energy Communities." *Proceedings of the ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference*, pp. 125-132, August 8-12, Salt Lake City, UT.
32. S. Huang, **W. Zuo**, M. D. Sohn 2016. "A Bayesian Network Model for Predicting the Cooling Load of Educational Facilities." *Proceedings of the ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference*, pp. 1-8, August 8-12, Salt Lake City, UT.
31. S. Huang, M.V. Cavey, R. Sterling, **W. Zuo**, L. Helsen, A. Giretti, M. Bonvini, Z. O'Neill, M. Wetter, A. Costa, G. Boehme, R. Klein, B. Dong, M. M. Keane 2016. "IEA Annex 60 Activity 2.3: Model Use during Operation, Approach and Case Studies." *Proceedings of the 12th REHVA World Congress (CLIMA2016)*,

May 22-25, Aalborg, Denmark.

30. S. Huang, **W. Zuo**, M. D. Sohn 2015. "A New Method for the Optimal Chiller Sequencing Control." *Proceedings of the 14th Conference of International Building Performance Simulation Association (Building Simulation 2015)*, pp. 316-323, December 7-9, Hyderabad, India.
29. R. Sterling, A. Giretti, M. Bonvini, Z. O'Neill, M. Wetter, M. V. Cavey, A. Costa, G. Boehme, **W. Zuo**, R. Klein, B. Dong, M. M. Keane 2015. "IEA Annex 60 Activity 2.3: Model Use during Operation, Approach and Case Studies." *Proceedings of the 14th Conference of International Building Performance Simulation Association (Building Simulation 2015)*, pp. 355-362, December 7-9, Hyderabad, India.
28. F. Niu, Z. O'Neill, **W. Zuo**, F. Li 2015. "Assessment of Different Data-Driven Algorithms for AHU Energy Consumption Predictions." *Proceedings of the 14th Conference of International Building Performance Simulation Association (Building Simulation 2015)*, pp. 1539-1546, December 7-9, Hyderabad, India.
27. M. Wetter, M. Bonvini, T. S. Nouidui, W. Tian, **W. Zuo** 2015. "Modelica Buildings Library 2.0." *Proceedings of the 14th Conference of International Building Performance Simulation Association (Building Simulation 2015)*, pp. 387-394, December 7-9, Hyderabad, India.
26. A. C. L. Malara, S. Huang, **W. Zuo**, M. D. Sohn, N. Celik 2015. "Optimal Control of Chiller Plants Using Bayesian Network." *Proceedings of the 14th Conference of International Building Performance Simulation Association (Building Simulation 2015)*, pp. 449-455, December 7-9, Hyderabad, India.
25. R. J. Miranda, S. Huang, G. A. Barrios, D. Li, **W. Zuo** 2015. "Energy Efficient Design for Hotels in the Tropical Climate Using Modelica." *Proceedings of the 11th International Modelica Conference*, pp. 71-78, September 21-23, Versailles, France. DOI: 10.3384/ecp1511871.
24. T. Li, G. Shao, **W. Zuo**, S. Huang 2015. "Genetic Algorithm for Building Optimization - State-Of-The-Art Survey." *Proceedings of the 9th International Symposium on Heating, Ventilation and Air Conditioning (ISHVAC) and the 3rd International Conference on Building Energy and Environment (COBEE)*, pp. 205-210, July 12-15, Tianjin, China. DOI: 10.1145/3055635.3056591.
23. **W. Zuo**, M. Wetter, D. Li, M. Jin, W. Tian, Q. Chen 2014. "Coupled Simulation of Indoor Environment, HVAC and Control System by Using Fast Fluid Dynamics and the Modelica Buildings Library." *Proceedings of the 2014 ASHRAE/IBPSA-USA Building Simulation Conference*, pp. 56-63, September 10-12, Atlanta, GA.
22. S. Huang, **W. Zuo** 2014. "Optimization of the Water-Cooled Chiller Plant System Operation." *Proceedings of the 2014 ASHRAE/IBPSA-USA Building Simulation Conference*, pp. 300-307, September 10-12, Atlanta, GA.
21. E. Widl, B. Delinchan, S. Kuebler, D. Li, W. Muller, V. Norrefeldt, T. S. Nouidui, S. Stratbucker, M. Wetter, F. Wurtz, **W. Zuo** 2014. "Novel Simulation Concepts for Buildings and Community Energy Systems Based on the Functional Mock-up Interface Specification." *Proceedings of the 2014 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES)*, April 14, Berlin, Germany. DOI: 10.1109/MSCPES.2014.6842396.
20. T. S. Nouidui, M. Wetter, **W. Zuo** 2013. "Functional Mock-Up Unit Import in EnergyPlus for Co-Simulation." *Proceedings of the 13th Conference of International Building Performance Simulation Association (Building Simulation 2013)*, pp. 3275-3282, August 26-28, Chambéry, France.
19. D. Kim, **W. Zuo**, J. E. Braun, M. Wetter 2013. "Comparisons of Building System Modeling Approaches for Control System Design." *Proceedings of the 13th Conference of International Building Performance Simulation Association (Building Simulation 2013)*, pp. 3267-3274, August 26-28, Chambéry, France.
18. M. Jin, Q. Chen, and **W. Zuo** 2013. "Validation of a Fast Fluid Dynamics Program for Simulating Natural Ventilation in Buildings." *Proceedings of the CLIMA 2013, the 11th REHVA World Congress and the 8th Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings*, June 16-19, Prague, Czech.
17. W. Tian, **W. Zuo** 2013. "Literature Review and Research Needs to Couple Building Energy and Airflow Simulation." *Proceedings of the APEC Conference on Low-carbon Towns and Physical Energy Storage*, pp. 492-496, May 25-26, Changsha, China.
16. T. S. Nouidui, K. Phalak, **W. Zuo**, M. Wetter 2012. "Validation and Application of the Room Model of the Modelica Buildings Library." *Proceedings of the 9th International Modelica Conference*, pp. 727-736,

September 3-5, Munich, Germany. DOI: 10.3384/ecp12076727.

15. M. Jin, **W. Zuo**, Q. Chen 2012. "Validation of Three Dimensional Fast Fluid Dynamics for Indoor Airflow Simulations." *Proceedings of the 2nd International Conference on Building Energy and Environment (COBEE2012)*, pp. 1055-1062, August 1-4, Boulder, CO.
14. T. S. Nouidui, M. Wetter, **W. Zuo** 2012. "Validation of the Window Model of the Modelica Buildings Library." *Proceedings of the 5th National Conference of International Building Performance Simulation Association-USA (SimBuild2012)*, pp. 529-536, August 1-3, Madison, WI.
13. **W. Zuo**, A. McNeil, M. Wetter, E. S. Lee 2011. "Acceleration of Radiance for Lighting Simulation by Using Parallel Computing with OpenCL." *Proceedings of the 12th Conference of International Building Performance Simulation Association (Building Simulation 2011)*, pp. 110-117, November 14-16, Sydney, Australia.
12. M. Wetter, **W. Zuo**, T. S. Nouidui 2011. "Modeling of Heat Transfer in Rooms in the Modelica "Buildings" Library." *Proceedings of the 12th Conference of International Building Performance Simulation Association (Building Simulation 2011)*, pp. 1096-1103, November 14-16, Sydney, Australia. DOI: 10.2172/1168737.
11. **W. Zuo**, Q. Chen 2011. "Validation of a Fast-Fluid-Dynamics Model for Predicting Distribution of Particles with Low Stokes Number." *Proceedings of the 12th International Conference on Indoor Air Quality and Climate (Indoor Air 2011)*, June 5-10, Austin, TX.
10. **W. Zuo**, M. Wetter 2011. "Advanced Simulations of Building Energy and Control Systems with an Example of Chilled Water Plant Modeling." *Proceedings of the 8th International Forum and Workshop on Combined Heat, Air, Moisture and Pollutant Simulations (CHAMPS 2011)*, March 20-22, Nanjing, China.
9. M. Wetter, **W. Zuo**, T. S. Nouidui 2011. "Recent Developments of the Modelica "Buildings" Library for Building Energy and Control Systems." *Proceedings of the 8th International Modelica Conference*, pp. 266-275, March 20-22, Dresden, Germany. DOI: 10.3384/ecp11063266.
8. **W. Zuo**, Q. Chen 2010. "Fast Simulations of Smoke Transport in Buildings." *Proceedings of the 41st International HVAC&R congress*, pp. 340-348, December 1-3, Beograd, Serbian.
7. J. Hu, **W. Zuo**, Q. Chen 2010. "Impact of Time-Splitting Schemes on the Accuracy of FFD Simulations." *Proceedings of the 7th International Indoor Air Quality, Ventilation and Energy Conservation in Buildings Conference (IAQVEC 2010)*, August 15-18, pp. 55-62, Syracuse, NY.
6. **W. Zuo**, Q. Chen 2010. "Improvements on the Fast Fluid Dynamic Model for Indoor Airflow Simulation." *Proceedings of the 4th National Conference of International Building Performance Simulation Association - USA (SimBuild2010)*, pp. 539-546, August 11-13, New York, NY.
5. **W. Zuo**, Q. Chen 2009. "High-Performance and Low-Cost Computing for Indoor Airflow." *Proceedings of the 11th Conference of International Building Performance Simulation Association (Building Simulation 2009)*, pp. 244-249, July 27-30, Glasgow, U.K.
4. **W. Zuo**, Q. Chen 2009. "Fast Parallelized Flow Simulations on Graphic Processing Units." *Proceedings of the 11th International Conference on Air Distribution in Rooms (RoomVent 2009)*, May 24-27, Busan, Korea.
3. **W. Zuo**, Q. Chen 2007. "Real Time Airflow Simulation in Buildings." *Proceedings of the 6th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings (IAQVEC 2007)*, October 28-31, Sendai, Japan.
2. **W. Zuo**, Q. Chen 2007. "Validation of Fast Fluid Dynamics for Room Airflow." *Proceedings of the 10th Conference of International Building Performance Simulation Association (Building Simulation 2007)*, pp. 980-983, September 3-6, Beijing, China.
1. Q. Chen, Z. Zhang, **W. Zuo** 2007. "Computational Fluid Dynamics for Indoor Environment Modeling: Past, Present, and Future." *Proceedings of the XXV Congresso Nazionale UIT sulla Trasmissione del Calore (25th UIT National Heat Transfer Conference)*, June 18-20, Trieste, Italy and also in *Proceedings of the 6th International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings (IAQVEC 2007)*, October 28-31, Sendai, Japan.

Posters

11. W. Saad, N. Ramakrishnan, H. Dhillon, **W. Zuo** 2017. "BIGDATA: Collaborative Research: IA: Big Data Analytics for Optimized Planning of Smart, Sustainable, and Connected Communities." *2018 Joint PI Meeting: NSF BIGDATA and Big Data Hubs & Spokes Programs*, June 20-22, Alexandria, VA.
10. **J. Wang, W. Zuo** 2018 "A Human-Centered Computational Framework for Urban and Community Design of Resilient Coastal Cities." *2018 Campus Sustainability Summit*, April 25, Boulder, CO.
9. **Y. Ye, W. Zuo, G. Wang** 2018 "Large Scale Energy Modeling for Building Energy Rating Standard." *2018 Campus Sustainability Summit*, April 25, Boulder, CO.
8. **X. Lu, W. Zuo, Y. Fu, J. Wang** 2018 "Multi-domain Modeling Framework for Future Smart and Connected Communities." *2018 Campus Sustainability Summit*, April 25, Boulder, CO.
7. W. Saad, N. Ramakrishnan, H. Dhillon, **W. Zuo** 2017. "BIGDATA: Collaborative Research: IA: Big Data Analytics for Optimized Planning of Smart, Sustainable, and Connected Communities." *2017 Joint PI Meeting: NSF BIGDATA and Big Data Hubs & Spokes Programs*, March 15-17, Washington DC.
6. **D. He, S. Huang, W. Zuo, R. Kaiser** 2016. "A Virtual Testbed for Net Zero Energy Communities." *BuildSys '16*, November 16-17, Palo Alto, CA.
5. **S. Huang, W. Zuo** 2015. "Optimization of Chilled Water Plant Operation Using Modelica Buildings Library." *2015 Florida Energy System Consortium Workshop*, May 20-21, Orlando, FL.
4. **D. Li, W. Zuo** 2014. "Modeling and Operation Evaluation for Innovative Heat Recovery System." *Honors Summer Research Reception*, University of Miami, Coral Gables, FL.
3. **W. Zuo, Q. Chen** 2009, 2010. "High Performance Indoor Airflow Simulation." *IBPSA-USA Winter Conference (2009)*, Chicago, IL and also at *the 1st Annual OMEGA Research Exhibition (2010)*, West Lafayette, IN.
2. **W. Zuo, Q. Chen** 2008. "Real Time Simulation of Indoor Airflow on Graphic Processing Units (GPU)." *The 3rd National Conference of IBPSA-USA (SimBuild 2008)*, Berkeley, CA.
1. **W. Zuo, Q. Chen** 2007. "Real Time Airflow Simulation in Buildings." *Sigma Xi Grad Student Poster Competition*, West Lafayette, IN.

Invited Talks

44. W. Zuo 2018. "Applications of Modelica-based Modeling Technology: From Sustainable Buildings to Smart and Resilient Cities." *Oak Ridge National Laboratory*, Oak Ridge, TN, December 19.
43. W. Zuo 2018. "Modeling and Simulation for Smart, Sustainable, and Resilient Cities." Building Energy and Environments Graduate Seminar, *Department of Civil, Architectural and Environment Engineering, University of Texas at Austin*, Austin, TX, November 26.
42. W. Zuo 2018. "Novel Computational Framework for Optimal Planning of Smart, Sustainable, and Connected Communities." Panel of Current Research: Building Smart, Community-Based Decision-Making, *Community Building Colorado-Style Conference*, Boulder, CO, October 19.
41. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Skidmore, Owings & Merrill LLP (SOM)*, Chicago, IL, September 28.
40. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Tianjin University*, Tianjin, China, May 25.
39. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Harbin Institute of Technology*, Harbin, China, May 24.
38. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Guangzhou University*, Guangzhou, China, May 22.
37. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Central South University*, Changsha, China, May 18.
36. W. Zuo 2018. "Improving Data Center Energy Efficiency through End-to-End Cooling Modeling and Optimization." *Hunan University*, Changsha, China, May 17.

35. W. Zuo 2018. "Improving Data Center Energy Efficiency through End-to-End Cooling Modeling and Optimization." *Tsinghua University*, Beijing, China, May 15.
34. W. Zuo 2018. "Equation-Based Modeling for Energy Efficient Data Center Cooling." *The 2018 International United Laboratory for Energy and Environment (IULEE) Workshop on Energy and Environment*, Boulder, CO, May 8.
33. W. Zuo 2018. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities", *Seminar at Pacific Northwest National Laboratory*, Richland, WA, March 30.
32. W. Zuo 2017. "Equation-based Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *National Renewable Energy laboratory*, Golden, CO, December 11.
31. W. Zuo 2017. "From Sustainable Buildings to Smart and Resilient Cities: Innovative Modeling for Real-World Challenges." *Engineers for a Sustainable World*, Denver, CO, December 8.
30. W. Zuo 2017. "Modeling and Simulation for Cyber-Physical Systems: From Sustainable Buildings to Smart and Resilient Cities." *Lunch & Learn Seminar, Ritchie School of Engineering and Computer Science, University of Denver*, Denver, CO, November 16.
29. W. Zuo 2017. "Net Zero Energy Community." Session of Smart City and Community: Connecting the Dots, *Community Building Colorado-Style Conference*, Boulder, CO, October 21.
28. W. Zuo 2017. "Modeling and Simulation for Cyber-Physical Systems: From Sustainable Building to Smart City." *CECE Seminar Series 2017, Department of Civil, Environmental and Construction Engineering, University of Central Florida*, Orlando, April 10.
27. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Tsinghua University*, Beijing, China, December 30.
26. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Nanjing University*, Nanjing, China, December 29.
25. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Southeast University*, Nanjing, China, December 28.
24. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *The 11th ME Forum, School of Mechanical Engineering, Tongji University*, Shanghai, China, December 27.
23. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Donghua University*, Shanghai, China, December 26.
22. W. Zuo 2016. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Hunan University*, Changsha, China, December 23.
21. W. Zuo 2016. "Data-Drive Solutions for Building Energy Efficiency-A View from Building Scientists." *Xiamen University of Technology*, Xiamen, China, December 22.
20. W. Zuo 2016. "From Buildings to Cities: Research and Development of Modelica-Based Technique for Real-World Applications." *Seminar at Energy Technologies Area (ETA), Lawrence Berkeley National Laboratory*, Berkeley, CA, November 14.
19. W. Zuo 2016. "Model-Based Optimization for Building Energy Efficiency." *The 221th Academic Seminar on Integration Science and Technology, Shenzhen Institutes of Advanced Technology, China Academy of Sciences*, Shenzhen, China, June 1.
18. W. Zuo 2016. "Model-Based Optimization for Building Energy Efficiency." *College of Automation, Chongqing University*, Chongqing, China, May 24.
17. W. Zuo, 2016. "Equation-Based Modeling and Simulation for Sustainable Buildings." *Taco Comfort Solutions*, Cranston, Rhode Island, October 26.
16. W. Zuo 2016. "Innovations in Modeling and Simulations for Sustainable Buildings." *Seminar at Argonne National Laboratory*, Chicago, IL, June 23.
15. W. Zuo 2016. "Model-Based Optimization for Building Energy Efficiency." *School of Aerospace Engineering, Xiamen University*, Xiamen, China, June 2.

14. W. Zuo 2016. "Model-Based Optimization for Building Energy Efficiency." *International Lecture for Sustainable Building and Environment, No. 121, College of Urban Construction and Environmental Engineering, Chongqing University, Chongqing, China, May 27.*
13. W. Zuo 2016. "Model-Based Optimization for Building Energy Efficiency." *Hongyi Lecture, No. 343, Chongqing University of Technology, Chongqing, China, May 23.*
12. W. Zuo 2015. "Innovations in Modeling and Simulations for Sustainable Buildings." *Graduate Seminars Series, Mechanical Engineering - Engineering Mechanics Department at Michigan Technological University, Houghton, MI, September 3.*
11. W. Zuo 2015. "Innovations in Modeling and Simulations for Sustainable Buildings." *Oak Ridge National Laboratory, Oak Ridge, TN, July 2.*
10. W. Zuo 2015. "Innovations in Modeling and Simulations for Sustainable Buildings." *Pacific Northwest National Laboratory, Richland, WA, April 17.*
9. W. Zuo 2014. "Recent Development and Application of Modelica-Based Simulation for Low Energy Buildings." *Department of Energy, Washington DC, October 8.*
8. W. Zuo 2014. "Next Generation Building Simulation Based on Modelica." *Florida Solar Energy Center, Cocoa, FL, May 12.*
7. W. Zuo 2014. "Modelica for Building System Design and Operation." *Lunch & Learn Seminar, Dassault Systemes Simulia Corp., Dearborn, MI, March 6.*
6. W. Zuo 2013. "Recent Breakthroughs in Building Simulations." *Shenzhen Institutes of Advanced Technology, China Academy of Sciences, Shenzhen, China, June 6.*
5. W. Zuo 2013. "Next Generation Building Simulation Tools Based on Modelica and Functional Mockup Interface." *College of Automation, Chongqing University, Chongqing, China, May 16.*
4. W. Zuo 2013. "Recent Breakthroughs in Building Simulations." *College of Urban Construction and Environmental Engineering, Chongqing University, Chongqing, China, May 15.*
3. W. Zuo 2013. "Recent Breakthroughs in Building Simulations." *Department of Automation, Xiamen University, Xiamen, China, May 13.*
2. W. Zuo 2012. "Put the Pedal to the Metal: How You Can Speed Up Your Simulation." *The 5th Conference of International Building Performance Simulation Association-USA (SimBuild2012), Madison, WI, August 3.*
1. W. Zuo, M. Wetter 2012. "Innovative Computer Tools for Energy Efficient Cooling of Data Centers." *Discovery 2015: HPC and Cloud Computing Workshop, Berkeley, CA, July 20.*

Guest Lectures

11. W. Zuo 2018. "Sustainable Buildings and Cities", COEN3210 Climate Change & Engineering, *University of Colorado Boulder, Boulder, CO, April 24.*
10. W. Zuo 2018. "From Earth to Mars: Modeling of Future Smart Community." Program in Environmental Design, *University of Colorado Boulder, Boulder, CO, February 16.*
9. W. Zuo 2017. "Equation-based Modeling for Sustainable, Smart and Resilient Infrastructures." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, Boulder, CO, October 31.*
8. W. Zuo 2017. "Introduction to Building Energy Systems." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, Boulder, CO, September 27.*
7. W. Zuo 2017. "Innovations in Modeling and Simulation: From Sustainable Buildings to Smart Cities." *Department of Industrial Engineering, University of Miami, Coral Gables, FL, March 8.*
6. W. Zuo 2017. "Overview of HVAC System." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder, Boulder, CO, February 16.*
5. W. Zuo 2017. "Equation-Based Modeling and Simulation: The Next Generation Technology for Sustainable Buildings and Cities." *Department of Mechanical and Materials Engineering, Florida International University, Miami, FL, January 20.*

4. W. Zuo 2016. "Research in Sustainable and Smart Cities." *School of Architecture, University of Miami*, Coral Gables, FL, September 23.
3. W. Zuo 2015. "Equation-Based Modeling and Simulations for Sustainable Buildings." *Department of Industrial Engineering, University of Miami*, Coral Gables, FL, April 1.
2. W. Zuo 2012. "Indoor Airflow Simulation." *School of Architectural Engineering and Construction, University of Nebraska*, Lincoln, NE.
1. W. Zuo 2012. "Physics of Turbulence and Turbulence Modeling." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder*, Boulder, CO.

Project Report

4. Y. Fu, X. Han, W. Zuo, M. Wetter, J. VanGilder 2018. "Optimization of Cooling Systems of Two Data Centers Using Modelica Buildings Library." pp. 1-91, Report for *US Department of Energy*, February 20th.
3. W. Zuo, Y. Fu, Y. Ye, I. R. Stahl 2017. "Smart Infrastructure and Renewable Energy: Study on ZenCity." Project report for the *ZenCity* project, pp. 1-8, May 29th.
2. S. Huang, W. Zuo 2015. "The Impact of the Condenser Water Set Point Optimization Frequency on the Energy Saving." Report for *Lawrence Berkeley National Laboratory*.
1. M. Wetter, X. Pang, W. Zuo, T. S. Nouidui, K. Phalak 2013. "Enabling Tools for Design of Energy Efficient Building Systems." Report for *California Energy Commission*, CEC-500-2014-055, pp. 1-72.

Other Major Publications/Presentations

53. W. Zuo 2019. "Fast Fluid Dynamics for Energy Efficient Building Design and Operation" *Seminar 28 on Challenges of Using Open Source CFD Tools, 2019 ASHRAE Winter Conference*, Atlanta, GA, January 14.
52. W. Zuo 2018. "Urban Energy System." *CU/NREL Strategy Session in Power Systems, Electric Grid Research, Education*, Boulder, CO, October 25.
51. W. Zuo 2018. "A Fast and Self-Learning Reduced Order Model for Indoor Airflow Simulation." *Seminar 23 on Faster, Cheaper, More Accessible: The Latest Research in Airflow and Thermal Modeling of Indoor Environments, 2018 ASHRAE Annual Conference*, Houston, TX, June 25.
50. W. Zuo, Y. Fu, M. Wetter, J. VanGilder 2017. "Improving Data Center Energy Efficiency through End-to-End Cooling Modeling and Optimization." *ASHRAE Data Center Energy Calculation Workgroup Meeting*, Webinar, December 8.
49. W. Zuo 2017. "Building Mechanical and Energy Systems." *Society of Asian Scientists & Engineers*, Boulder, CO, October 4.
48. W. Zuo 2017. "IBPSA Project 1." *Building Simulation 2017 Un-Conference, SimClub*, Denver, CO, September 14.
47. W. Zuo 2017. "Research Towards to Computational Frameworks for Smart, Sustainable, and Resilient Cities." *Building Simulation 2017 Conference*, San Francisco, CA, August 8.
46. Y. Fu, W. Zuo, M. Wetter, J. VanGilder 2017. "Improving Data Center Energy Efficiency through End-To-End Cooling Modeling and Optimization." *ASHRAE Data Center Energy Calculation Workgroup Meeting*, Long Beach, CA, June 25.
45. W. Zuo 2017. "Innovations in Modeling and Simulation for Cyber-Physical Systems: From Sustainable Building to Smart City." *Department of Civil and Environmental Engineering, Vanderbilt University*, Nashville, TN, March 1.
44. W. Zuo, Y. Fu, Y. Ye, I. R. Stahl 2017. "Smart Infrastructure and Renewable Energy." "*Zencity Workshop: Designing a smart city in Yucatán*" of the *Smart Cities Miami Conference*, Miami, FL, February 24.
43. W. Zuo 2017. "From Sustainable Buildings to Smart and Resilient Cities: Research and Development of Equation-based Modeling for Solving the Real-World Challenges." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder*, Boulder, CO, February 16.
42. W. Zuo 2016. "Advanced Modeling Tools for Energy Efficient Data Center Cooling." *Webinar for ASHRAE*

TC 9.9 Data Center Energy Calculation Work Group, December 3.

41. D. He, S. Huang, W. Zuo, Y. Fu, R. Kaiser 2016. "Modelica-Based Modeling for Net Zero Energy Communities." *North America Modelica Users' Group Conference*, Troy, MI, September 28-29.
40. W. Zuo, R. Kaiser, S. Welty 2016. "Envisioning a 21st Century Renewable, Reliable, Resilient, and Affordable Energy Infrastructure for Cuba." *Association for the Study of the Cuban Economy 2016 Annual Meeting*, July 28-30.
39. R. J. Miranda, S. Huang, W. Zuo 2016. "Designing an Energy and Water Efficient Hotel Using an Equation-Based Modeling Approach." *Seminar 67 on Simulation for Cutting-Edge Building Design, 2016 ASHRAE Winter Meeting*, Orlando, FL, January 27.
38. W. Zuo 2016. "A Fast Coupled Simulation of 3D Indoor Airflow Motion and HVAC System for Ventilation Control of Complex Environment." *Seminar 11 on New CFD Techniques for Design of Air Distribution Systems, 2016 ASHRAE Winter Meeting*, Orlando, FL, January 24.
37. W. Zuo 2015. "Coupling Indoor Airflow, HVAC, Control and Building Envelope Heat Transfer in the Modelica Buildings Library." *Joint Workshop of IEA Annex 60 and IBPSA-NVL*, Leuven, Belgium, September 18.
36. W. Zuo 2015. "Modelica-Based Model Predictive Control of a Chilled Water Plant." *Seminar 48 on Model Predictive Control: Application to Chilled Water Plants and Radiant Slab Cooling, 2015 ASHRAE Annual Conference*, Atlanta, GA, June 30.
35. W. Zuo 2015. "Innovations in Modeling and Simulations for Sustainable Buildings." *Department of Civil, Architectural and Environment Engineering, University of Texas at Austin*, Austin, TX, March 2.
34. W. Zuo 2014. "Smart Energy Campus for the University of Miami." *University of Miami*, Coral Gables, December 15.
33. W. Zuo 2014. "Modelica for the Controls Design of Energy Efficient Hotel." *North America Modelica Users Group Meeting*, Atlanta, GA, October 13-14.
32. W. Zuo, M. Wetter 2013. "Modeling of HVAC System for Controls Optimization Using Modelica." *Intelligent Building Operations Workshop, University of Colorado Boulder*, Boulder, CO, June 20-22.
31. D. Kim, W. Zuo, J.E. Braun, M. Wetter 2013. "Comparisons of Building System Modeling Approaches for Control System Design." *Intelligent Building Operations Workshop, University of Colorado Boulder*, Boulder, CO, June 20-22.
30. W. Zuo, M. Wetter 2013. "Optimization of Chilled Water Plant Control Using Modelica." *Modelica North America User Virtual Meeting*, February 18.
29. W. Zuo 2012. "Building Systems for Net Zero Energy Buildings." *Department of Civil & Architecture Engineering, University of Miami*, Miami, FL, September 10.
28. W. Zuo 2012. "Innovations in Simulation Research for Low Energy and Healthy Buildings." *School of Architectural Engineering and Construction, University of Nebraska*, Lincoln, April 4.
27. W. Zuo 2012. "Innovations in Simulation Research for Low Energy and Healthy Buildings." *Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder*, Boulder, March 12.
26. W. Zuo, 2012. "Functional Mockup Interface – An Open-Source Standard for Co-Simulation and Model Exchange." *Seminar 53 on Integrated Multi-Domain Simulations for Innovative Building Design and Operation: Part 2, 2012 ASHRAE Winter Conference*, Chicago, IL, January 25.
25. W. Zuo, M. Wetter 2011. "Building Systems for Net Zero Energy Buildings." *Carbon Cycle 2.0 LDRD Seminar Series, Lawrence Berkeley National Laboratory*, Berkeley, CA, August 24.
24. W. Zuo, 2011. "Evaluation and Optimization of Control System for Water Side Economizer." *Seminar 20 on Operation-oriented Flexible Building System Modeling, 2011 ASHRAE Annual Conference*, Montreal, Canada, June 26.
23. N. Keen, R. Gerber, W. Zuo 2011. "What Is NERSC and How Can Their Computer Resources Help You?" *Seminar for Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory*, Berkeley, CA, June 23.
22. M. Wetter, W. Zuo 2011. "Challenges and Numerical Consideration in Building Energy Modeling." *Seminar*

MS40 on Dynamical System Methods for Design and Operation of Sustainable Buildings – Part I of II, Society of Industrial and Applied Mathematics Conference on Application of Dynamical Systems, Snow Bird, UT, May 23.

21. W. Zuo 2011. "Simulation Research for Net Zero Energy Buildings." *Department of Civil & Architecture Engineering, University of Miami, Miami, FL, March 11.*
20. W. Zuo 2011. "Towards to Net Zero Energy Buildings – Innovations in Building Simulations." *United Technologies Research Center, East Hartford, CT, February 11.*
19. W. Zuo 2011. "Simulation Research for Low Energy Buildings." *Seminar for Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, CA, January 27.*
18. W. Zuo 2010. "Towards to Net Zero Energy Buildings – Innovations in Building Simulations." *MAE/EQS STAR Center Seminar, Department of Mechanical and Aerospace Engineering, Syracuse University, Syracuse, NY, November 19.*
17. W. Zuo 2010. "High Performance Flow Simulation on Graphics Processing Unit." *Presentation for Indoor Environment Research group, Lawrence Berkeley National Laboratory, Berkeley, CA, June 17.*
15. W. Zuo 2010. "High Performance Flow Simulation on Graphics Processing Unit." *Seminar for Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, CA, June 17.*
14. W. Zuo, Q. Chen 2010. "Fast Predictions of Particles with Small Stokes Number in a Ventilated Room." *Seminar 38 on Modeling of Particle Transport in Indoor Environment for Air Quality Analyses, 2010 ASHRAE Winter Conference, Orlando, FL, January 26.*
13. W. Zuo 2009. "Advanced Simulations of Air Distributions in Buildings." *ExxonMobile Upstream Research Company, Houston, TX, December 1.*
12. W. Zuo, T. Zhang, K. Lee, Q. Chen 2009. "A Simplified Approach to Describe Complex Diffusers in Displacement Ventilation for CFD Simulations." *Seminar 35 on Modeling Technique for Personal Ventilation, 2009 ASHRAE Annual Conference, Louisville, KY, June 23.*
11. W. Zuo, Q. Chen 2009. "High Performance, Low-Cost Indoor Airflow Simulation on Graphics Hardware." *Research in Engineered Environments Seminar Series, West Lafayette, IN, March 24.*
10. W. Zuo 2009. "Advanced Simulations of Air Distributions in Buildings." *Department of Civil, Architectural, and Environmental Engineering, Drexel University, Philadelphia, PA, March 11.*
9. W. Zuo, Q. Chen 2009. "Real Time Simulation for Airflow Motion and Contaminant Transportation in Buildings." *Seminar 15 on CFD Simulations of Air Distributions in Buildings: Past, Present and Future, 2009 ASHRAE Winter Conference, Chicago, IL, January 25.*
8. W. Zuo, Q. Chen 2008. "Real-Time Airflow Simulation in Buildings by Using Graphic Process Units." *Abstracts of the 1st International Conference on Building Energy and Environment (COBEE), Dalian, China.*
7. W. Zuo, Q. Chen 2007. "Fast Fluid Dynamics for Applications in Building Environment." *Thermal System Seminar Series, Purdue University, West Lafayette, IN, October 2.*
6. W. Zuo, Q. Chen, X. Yuan, L. Glicksman 2007. "Displacement Ventilation System Modeling." *Seminar 19 on Modeling Stratified Room Air Distribution with Energy Simulation Tools, 2007 ASHRAE Annual Conference, Long Beach, CA.*
5. V. Kumar, J. Jovanovic, M. Breuer, W. Zuo, F. Durst 2005. "Anisotropy Invariant Reynolds Stress Model (AIRSM) and its Applications to Separated Flows." *des Kompetenznetzwerk fuer Technisch-Wissenschaftliches Hoch- und Hoehstleistungsrechnen in Bayern (KONWIHR) Quartl, Vol. 40, pp. 12-16.*
4. W. Zuo 2005. "The Implementation and Verification of the Anisotropy Invariant Reynolds Stress Turbulence Model." *Research Colloquium of German Aerospace Center, Göttingen, Germany.*
3. W. Zuo 2005. "The Implementation and Verification of the Anisotropy Invariant Reynolds Stress Turbulence Model." *Institute of Aerodynamics and Gas Dynamics, University of Stuttgart, Germany.*
2. W. Zuo 2005. "Introduction to CFD." *Joined Advanced Student School, St. Petersburg, Russia.*
1. W. Zuo 2004. "Physics of Turbulence and Turbulence Modeling." *Summer Academy, Sarntal, Italy, July.*

Contribution to Software Development

- Modelica Buildings library, publically released at <http://simulationresearch.lbl.gov/modelica>
- Fast Fluid Dynamics for Indoor Environment Simulation (publically released as a part of Modelica Buildings library)
- Reduced order model for data center airflow management, publically released at https://github.com/doetools/isat_ffd

International Research Collaboration

	Project Title	Organizer	Participating Countries
3.	IBPSA Project 1 “BIM/GIS and Modelica Framework for Building and Community Energy System Design and Operation”	IBPSA	11
2.	Annex 66 “Definition and Simulation of Occupant Behavior in Buildings” (2013-2017)	International Energy Agency	24
1.	Annex 60 “New Generation Computational Tools for Building and Community Energy Systems Based on the Modelica and Functional Mockup Interface Standards” (2012-2017)	International Energy Agency	16

Awards

- Best Paper Award, Chinese National Conference on HVAC Modeling, 2017.
- Lewis-Worcester Faculty Fellow, College of Engineering, CU Boulder, 2017-2020
- Distinguished Service Award, ASHRAE, 2017.
- Eliahu I. Jury Early Career Research Award, College of Engineering, University of Miami, 2016.
- SEEDS You Choose Leadership Award, University of Miami, 2016.
- Emerging Professional Award in recognition of superior early achievement in the field of energy modeling, IBPSA-USA, 2016.
- SEEDS You Choose Leadership Award, University of Miami, 2015.
- SEEDS You Choose Leadership Award, University of Miami, 2014.
- Provost Research Award, University of Miami, 2014.
- SEEDS You Choose Leadership Award, University of Miami, 2013.
- Best Poster Award, The 1st OMEGA Annual Research Exhibition, Purdue University, 2010.
- ASHRAE Graduate Student Grant-In-Aid Award 2009-10, 2009
- Best Poster Award, IBPSA-USA Winter Meeting, Chicago, IL, 2009
- The 3rd Place in Poster Competition, The 3rd National Conference of IBPSA-USA (SimBuild 2008), Berkeley, CA, 2008
- Student Scholarship, The 3rd National Conference of IBPSA-USA (SimBuild 2008), Berkeley, CA, 2008
- Graduate School Incentive Grant, Purdue University, 2008
- Scholarship for attending U.S. Foreign Policy Colloquium, 2007
- Travel Award for Doctoral Student, School of Mechanical Engineering, 2007
- Siemens Scholarship, Siemens AG, Germany, 2004

Departmental and University Committees, Services, etc.

Activities	Function	Beginning	Ending
ASHRAE University of Colorado Boulder Student Branch	Faculty Co-Advisor	09/2018	-
Graduate Committee, CEAE Department, University of Colorado Boulder	AREN Representative	08/2017	-

ASHRAE University of Miami Student Branch	Faculty Advisor	02/2017	08/2017
College of Engineering Strategic Plan Implementation Work Group 1: Excellence in Research, University of Miami	Member	09/2016	10/2016
Student Recruitment and Retention for CAE department, University of Miami	Responsible Faculty	05/2016	08/2017
College of Engineering Roadmap initiative: Working Group 2 Problem-Based Interdisciplinary Collaboration, University of Miami	Member	02/2016	03/2016
University of Miami Team for “2016 U.S. Department of Energy Race to Zero Student Design Competition”	Faculty Advisor	09/2015	04/2016
Search Committee for Dean of College of Engineering, University of Miami	Member	09/2014	07/2015
University of Miami Student Team for “2014 Atlantic Coast Conference Clean Energy Challenge”	Faculty Advisor	10/2013	03/2014
Scientist Search Committee of Environment Energy Technology Division, Lawrence Berkeley National Laboratory	Chair	02/2012	05/2012
Mentoring Program of Environment Energy Technology Division, Lawrence Berkeley National Laboratory	Mentor	01/2012	06/2012

Professional Committees & Services

<i>Journal</i>	<i>Function</i>	<i>Beginning</i>	<i>Ending</i>
Sustainable Buildings	Associate Editor	2015	2017

Peer Reviewers

Journals:

1. Applied Energy
2. Applied Thermal Engineering
3. ASHRAE Transactions
4. Building and Environment
5. Building Simulation
6. Energy
7. Energy and Buildings
8. Engineering Applications of Computational Fluid Mechanics
9. HVAC&R Research
10. IEEE Access
11. Indoor and Built Environment
12. Information Science
13. International Journal for Numerical Methods in Fluids
14. Journal of Architectural Engineering
15. Journal of Building Performance Simulation
16. Journal of Energy Resources Technology
17. Simulation Modelling Practice and Theory

18. Solar Energy
19. Sustainable Buildings
20. The Annals of Occupational Hygiene

Conferences:

1. Symposium on Simulation for Architecture and Urban Design (SimAUD2019), Atlanta, GA, 2019.
2. The 13th International Modelica Conference (Modelica 2019), Regensburg, Germany, 2019.
3. The 15th Conference of International Building Performance Simulation Association (Building Simulation 2017), San Francisco, CA, 2017.
4. ASHRAE 2017 Winter Conference, Las Vegas, NV, 2017
5. The ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference, Salt Lake City, UT, 2016.
6. The 14th Conference of International Building Performance Simulation Association (Building Simulation 2015), Hyderabad, India, 2015.
7. ASME 2015 International Mechanical Engineering Congress & Exposition (IMECE), Houston, TX, 2015.
8. ASME 2015 International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK2015), San Francisco, CA, 2015
9. The 1st International Conference of the CIB Middle East & North Africa Research Network (CIB-MENA 2014), Abu Dhabi, UAE, 2014.
10. The 2014 ASHRAE/IBPSA-USA Building Simulation Conference, Atlanta, GA, 2014.
11. The 13th Conference of International Building Performance Simulation Association (Building Simulation 2013), Chambéry, France, 2013.
12. The 5th National Conference of IBPSA-USA (SimBuild 2012), Madison, WI, 2012.
13. The 2nd International Conference on Building Energy and Environment (COBEE2012), Boulder, Colorado, 2012.
14. The 12th Conference of International Building Performance Simulation Association (Building Simulation 2011), Sydney, Australia, 2011.
15. The 5th International Conference on Energy Sustainability (EsFuelCell2011), Washington D.C., 2011.
16. ASHRAE 2011 Winter Conference, Las Vegas, NV, 2011.
17. The 4th National Conference of IBPSA-USA (SimBuild 2010), New York, NY, 2010.
18. The 6th International Symposium on Heating, Ventilating and Air Conditioning, Nanjing, China, 2009.

Proposals Review:

- U.S. National Science Foundation, 2017
- National Endowment for the Humanities, 2016
- University of Miami, 2016
- Swiss National Science Foundation, 2016
- U.S. National Science Foundation, 2016
- ASHRAE, 2015
- Swiss National Science Foundation, 2013
- U.S. Department of Energy, 2013.
- ASHRAE, 2011.

<i>Conference</i>	<i>Function</i>	<i>Date</i>
Symposium on Simulation for Architecture and Urban Design (SimAUD2019), Atlanta, GA	Program Committee Member	Apr. 7-9, 2019
13th International Modelica Conference (Modelica 2019), Regensburg, Germany	Program Committee Member	Mar. 4-6, 2019

American Modelica Conference 2018, Boston, MA	International Program Committee Member	Oct. 9-10, 2018
Symposium on Simulation for Architecture and Urban Design (SimAUD2018), Delft, the Netherlands	Scientific Committee Member	Jun. 4-7, 2018
The 4th International Conference on Building Energy and Environment (COBEE2018), Melbourne, Australia	Keynote Session Chair, International Scientific Committee Member	Feb. 5-9, 2018
The 15th Conference of International Building Performance Simulation Association (Building Simulation 2017), San Francisco, CA	Executive Scientific Committee Member, Session Chair	Aug. 7-10, 2017
ASHRAE 2017 Annual Conference, Long Beach, CA	Session Chair	Jun. 24-28, 2017
2017 Joint PI Meeting: NSF BIGDATA and Big Data Hubs & Spokes, Washington DC	Breakout Session Chair	Mar. 15-16, 2017
ASHRAE 2017 Winter Conference, Chicago, IL	Session Chair	Jan. 28- Feb. 1, 2017
2016 International Conference on Building Materials and Civil Engineering, Wuhan, China	Technical Program Committee Member	Dec. 10-11, 2016
The ASHRAE and IBPSA-USA SimBuild 2016: Building Performance Modeling Conference, Salt Lake City, UT	Session Chair	Aug. 10-12, 2016
ASHRAE 2016 Annual Conference, St Louis, MO	Session Chair	Jun. 25-29, 2016
International Energy Agency Annex 60 “New generation computational tools for building and community energy systems based on the Modelica and Functional Mockup Interface standards” Expert Meeting, Coral Gables, FL	Organization Committee Chair	May 9-11, 2016
Healthy Buildings 2015 America, Boulder, CO	Scientific Committee Member	Jul. 19-22, 2015
The 3rd International Conference on Building Energy and Environment (COBEE) and the 9th ISHVAC (the International Symposium on Heating, Ventilation and Air Conditioning), Tianjin, China	International Scientific Committee Member	Jul.12-15, 2015
ASHRAE 2015 Annual Conference, Atlanta, GA	Session Chair	Jun. 27-Jul. 1, 2015
ASHRAE 2015 Winter Conference, Chicago, IL	Session Chair	Jan. 24-28, 2015
The 1 st International Conference of the CIB Middle East & North Africa Research Network (CIB-MENA 2014), Abu Dhabi, UAE	International Scientific Committee Member	Dec. 14-16, 2014

ASHRAE 2014 Annual Conference, Seattle, WA	Session Chair	Jun. 28-Jul. 2, 2014
ASHRAE 2014 Winter Conference, New York City, NY	Session Chair	Jan. 18-22, 2014
The 13th Conference of International Building Performance Simulation Association (Building Simulation 2013), Chambéry, France	Session Chair	Aug. 25-28, 2013
ASHRAE 2013 Winter Conference, Dallas, TX	Session Chair	Jan. 26-30, 2013
The 2nd International Conference on Building Energy and Environment (COBEE2012), Boulder, CO.	International Scientific Committee Member	Aug. 1-4, 2012
ASHRAE 2012 Winter Conference, Chicago, IL	Session Chair	Jan. 21-25, 2012
ASHRAE 2011 Annual Conference, Montreal, Canada	Session Chair	June 25-29, 2011
ASHRAE 2011 Winter Conference, Las Vegas, NV	Session Chair	Jan. 29-Feb. 22, 2011
The 4th National Conference of IBPSA-USA (SimBuild2010), New York, NY	Session Chair	Aug. 11-13, 2010
The 19 th International Compressor Engineering Conference, West Lafayette, IN	Session Vice-chair	July 14-17, 2008
The 12 th International Refrigeration and Air Conditioning Conference, West Lafayette, IN	Session Vice-chair	July 14-17, 2008

Professional Services	Function	Beginning	Ending
International Building Performance Simulation Association (IBPSA)	Treasurer	2016	-
	Affiliate Director Representing USA on the Board of IBPSA	2016	-
ASHRAE Project “RP-1675 - Guidance for CFD Modeling of Data Centers”	Project Monitoring Subcommittee Member	2016	-
International Building Performance Simulation Association – USA Chapter	Research Committee Chair	2014	2018
ASHRAE TC 4.10 Indoor Environment Modeling	Vice Chair	2017	2019
	Secretary	2015	2017
	Research Subcommittee Chair	2013	2015

	Voting Member	2013 2017	2016 2021
ASHRAE TC 7.4 Exergy Analysis for Sustainable Buildings	Chair	2017	-
	Secretary	2015	2017
	Voting Member	2015	2019
ASHRAE TC 4.7 Energy Calculation	Voting Member	2013	2017
ASHRAE Student Congress	Representative	2009	2009

Professional Membership

- Member of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), since 2007
- Member of IBPSA (International Building Performance Simulation Association), since 2008

Ph.D. Theses Supervised

<i>Student</i>	<i>Title of Thesis</i>	<i>Completion Date</i>
Kathryn Hinkelman	Modeling of smart and sustainable communities	Current Student
Xu Han	Model based optimization for data center cooling	Current Student
Xing Lu	Modeling and optimization of smart cities	Current Student
Jing Wang	Advanced modeling for resilient city	Current Student
Thomas Alonso Sevilla*	Building to grid integration	Current Student
Yunyang Ye	Large scale building energy modeling and analysis for building energy rating program	Current Student
Yangyang Fu	Model based optimization for advanced building control	Current Student
Reymundo J. Miranda*	Equation based modeling for hybrid systems in buildings	Current Student
Wei Tian	Coupled simulation of indoor airflow, HVAC, control, and building envelope <i>First employer after graduation: Schneider Electric</i>	07/2017
Sen Huang	Model based technologies for enhancing building operation <i>First employer after graduation: Pacific Northwest National Laboratory</i>	04/2016

*Students stay at the University of Miami after my transfer to CU Boulder. Co-advised with Dr. Gang Wang.

Internal Examiner of Ph.D. Theses

9. Baqer Eisa Ameer. Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.

8. Ayesah Mohammad Al-Awadhi. Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
7. Dareum Nam. "Development of New Modules for Predicting Energy Performance of Active Chilled Beam Systems with an Integrative Experimental and Modeling Approach." Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
6. Omar Aloui. "Design-constrained and Performance-based Form Finding of Tensegrity Structures." Department of Civil, Architectural and Environmental Engineering, University of Miami.
5. Koosha Kiamehr 2017. "Energy Efficiency Improvement of VFD-Motor-Pump/Fan Systems." Department of Civil, Architectural and Environmental Engineering, University of Miami.
4. Jiaye Gan 2016. "High Fidelity Simulation of Fluid-Structure Interaction in Transonic and Supersonic Flow." Department of Mechanical and Aerospace Engineering, University of Miami.
3. Kaustubh Phalak 2016. "Control Methods to Improve Non-Linear HVAC System Operations." Department of Civil, Architectural and Environmental Engineering, University of Miami.
2. Esber Andiroglu 2015. "Development of a Virtual Air / Water Flow Meter Using Fan / Pump Head and Motor Power." Department of Civil, Architectural and Environmental Engineering, University of Miami.
1. Song Luo 2014. "Lateral Current Distribution in Proton Exchange Membrane Fuel Cells with Interdigitated Flow Field." Department of Mechanical and Aerospace Engineering, University of Miami.

External Examiner of Ph.D. Theses

2. Yunchao Yang 2018. "High Fidelity Numerical Investigations of Super-Lift Co-Flow Jet Active Flow Control Airfoil and its Applications". Department of Mechanical and Aerospace Engineering, University of Miami.
1. Donghun Kim 2015. "Development and application of models and algorithms for model-predictive control in buildings." School of Mechanical Engineering, Purdue University.

Master Students (Non-Thesis) Supervised

2. Bernardo Samuel Benzecry 2016. Department of Civil, Architectural and Environmental Engineering, University of Miami.
1. Raul Andres Velarde 2015. Department of Civil, Architectural and Environmental Engineering, University of Miami.

Internal Examiner of Master Theses

4. John Nelson 2018. "Investigations into the Passive Cooling Potential of Mass inherent in Medium to Large Commercial Buildings. Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
3. Nicholas Long 2018. "Reduced Order Models for Rapid Analysis of Ambient Loops for Commercial Buildings." Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
2. Ezgi Ozcoban 2017. "Comparison of Reinforced Concrete Bridge and Fiber Reinforced Polymer Bridge Using Life Cycle Assessment." Department of Civil, Architectural and Environmental Engineering, University of Miami.
1. Billy Bartow 2014. "Experimental Investigations of Base Drag Reduction Using Passive Jet Flow Control." Department of Mechanical and Aerospace Engineering, University of Miami.

Internal Examiner of Master Project Reports

3. Nicholas Ryan Smith 2018. "Energy Modeling Of Wastewater Heat Recovery Systems". Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
2. Wayne Leonard 2018. "Shallow Earth Seasonal Heat Storage – An Effective, Low-Cost Approach to Geothermal HVAC." Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.
1. Libby I. Coleman 2018. "Climate-based Comparative Lifecycle Assessment of Glazing Assemblies for Glass Curtain Walls in Commercial Office Buildings." Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder.

Hosted Visiting Scholars

10. Shifang Huang, Ph.D. Student, Southeast University, China, 01/2018-12/2018.
9. Peng Xu, Associate Professor, Chongqing University of Technology, China, 06/2017-05/2018.
8. Yihui Qiu, Associate Professor, Xiamen University of Technology, China, 04/2017-10/2017.
7. Qiujian Wang, Ph.D. Student, Tongji University, China, 03/2017-06/2018.
6. Guang Zhou, Ph.D. Student, Guangzhou University, China, 11/2016-10/2017.
5. Dong He, Ph.D. Student, Chongqing University, China, 09/2015-09/2016.
4. Guifang Shao, Associate Professor, Xiamen University, China, 08/2014-07/2015.
3. Tiejun Li, Ph.D. Student, Chongqing University, China, 08/2014-07/2015.
2. Dongbo Pan, Associate Professor, Southwest University, China, 08/2014-07/2015.
1. Changjiang Jiang, Associate Professor, Chongqing University of Posts and Telecommunications, China, 08/2014-07/2015.

Supervised Undergraduate / Master Students for Research

24. Satish Upadhyaya, B.S. in Computer Science, University of Colorado Boulder, 2018-Present.
23. Matthew Hayden Strong, B.S. in Computer Science, University of Colorado Boulder, 2018-Present.
22. Ayush Khanal, B.S. in Computer Science, University of Colorado Boulder, 2018-Present.
21. Danlin Hou, M.S. in Architectural Engineering, University of Colorado Boulder, 2017-2018.
20. Peilin Yang, M. S. in Architectural Engineering, University of Colorado Boulder, 2017-Present.
19. Keya Joshi, M. S. in Mechanical Engineering, University of Colorado Boulder, 2017-Present.
18. Daniel Jacques, B. S. in Mechanical Engineering, University of Maryland, Baltimore County, 2017.
17. Hiba Benkhye, B. S. in Mechanical Engineering, University of Miami, 2017.
16. Sophia Delgado, B. S. in Industrial Engineering, University of Miami, 2017.
15. Isabella Stahl, B. S. in Architectural Engineering, University of Miami, 2017.
14. Alex David Plumb, B. S. in Architectural Engineering, University of Miami, 2017.
13. Clay Wyda, B. S. in Environmental Engineering, University of Miami, 2016-2017.
12. Isabella Goltz Ver, B. S. in Chemical Engineering, Rural Federal University of Rio de Janeiro, 2016.
11. Drake Peterson, B. S. in Architectural Engineering, University of Miami, 2016-2017.
10. Robert Foster, B. S. in Aerospace Engineering, University of Miami, 2015.
9. Lonching Eng, B. S. in Electric Engineering, University of Miami, 2015-2016
8. Bernardo Samuel Benzecry, M. S. in Architectural Engineering, University of Miami, 2015-2016.
7. Ana Carolina Laurini Malara, B. S. in Civil Engineering, University of Sao Paulo, 2014-2016.
6. Thomas Alonso Sevilla, B. S. in Electric Engineering, University of Miami, 2014-2016.
5. German Augusto Barrios, B. S. in Electric Engineering, University of Miami, 2014-2015.
4. Mary Semaan, M. S. in Environmental Engineering, University of Miami, 2014.
3. Christina Marie Thomas, B. S. in Electric Engineering, University of Miami, 2014.
2. Dan Li, B. S. in Physics and Mathematics, University of Miami, 2013-2015.
1. Ana C. Cohen Mobily-Guitta, B. S. in Architectural Engineering, University of Miami, 2013-2014.

Awards Received by Zuo's Students

19. Yunyang Ye 2018. ASHRAE Student Travel Grant, \$750.
18. Yangyang Fu 2018. ASHRAE Student Travel Grant, \$750.
17. Yangyang Fu 2018. IBPSA-USA travel scholarship for attending the 2018 Building Performance Analysis Conference and SimBuild in Chicago, IL, \$1,000.
16. Yangyang Fu 2018. ASHRAE Grant-in-Aid Award, \$10,000.
15. Wei Tian 2017. Outstanding Graduate Award. Department of Civil, Architecture and Environmental Engineering, University of Miami.
14. Wei Tian 2017. ASHRAE Grant-in-Aid Award, \$10,000.
13. Yunyang Ye 2017. Outstanding Service Award. ASHRAE University of Miami Chapter.
12. Wei Tian 2017. Outstanding PhD Research Award. College of Engineering, University of Miami.
11. Ana Carolina Laurini Malara 2016. Travel scholarship for the Summer Camp at Brazilian National Institute of Pure and Applied Mathematics, Rio de Janeiro, Brazil.
10. Sen Huang 2016. IBPSA-USA travel scholarship for attending the ASHRAE and IBPSA-USA SimBuild 2016

- Conference in Salt Lake City, UT.
9. Thomas Sevilla 2016. Tuition Scholarship. Department of Civil, Architecture and Environmental Engineering, University of Miami, Coral Gables.
 8. Sen Huang 2014. NSF Travel Award for attending the Symposium on Building Energy Uncertainty and Risk Analysis at the Georgia Tech.
 7. Wei Tian 2014. NSF Travel Award for attending the Symposium on Building Energy Uncertainty and Risk Analysis at the Georgia Tech.
 6. Sen Huang 2014. ASHRAE/IBPSA-USA student travel scholarship for attending the ASHRAE/IBPSA-USA Building Simulation Conference in Atlanta, Georgia.
 5. Wei Tian 2014. ASHRAE/IBPSA-USA student travel scholarship for attending the ASHRAE/IBPSA-USA Building Simulation Conference in Atlanta, Georgia.
 4. Dan Li 2014. Honors Summer Research Program. University of Miami.
 3. Dan Li 2014. "Beyond the Book" summer award for research-based learning. College of Arts and Science, University of Miami.
 2. Dan Li, Reymundo J. Miranda 2014. "Semifinalist team" representing the University of Miami in the "Atlantic Coast Conference Clean Energy Challenge" at the University of Maryland, College Park, MD.
 1. Reymundo J. Miranda 2013. Tuition Scholarship. Department of Civil, Architecture and Environmental Engineering, University of Miami.