

## Chapters in Books

"*Thermal Modeling of Technology Infrastructure Facilities: A Case Study of Data Centers*", by J. Rambo and Y. Joshi, **Handbook of Numerical Heat Transfer, Second Edition**, W.J. Minkowycz, E.M. Sparrow, and J.Y. Murthy Eds., John Wiles & Sons, 2006, pp. 821-850.

## Articles in Archival Journals

"Thermal Performance Metrics for Arranging Forced Air Cooled Servers in a Data Processing Cabinet", J. Rambo and Y. Joshi, **ASME Transactions, J. Electronic Packaging**, Vol. 127, pp. 452-459, 2005

"Convective Transport Processes in Data Centers", Jeffrey Rambo and Y. Joshi, **Numerical Heat Transfer, A**, Vol. 49, pp. 923-945, 2006.

"An Approach for Robust Design of Turbulent Convective Systems", N. Rolander, J. Rambo, Y. Joshi, J.K. Allen, and F. Mistree, **ASME J. Mechanical Design**, Vol. 128, pp. 844-855, 2006.

"Reduced-Order Modeling of Turbulent Forced Convection With Parametric Conditions", J. Rambo and Y. Joshi, **Int. J. Heat Mass Transfer**, Vol. 50, pp. 539-551, 2007.

"Modeling of Data Center Airflow and Heat Transfer: State of the Art and Future Trends", J. Rambo and Y. Joshi, **Distributed and Parallel Database**, *Special Issue on High Density Data Centers*, Vol. 21, pp. 193-225, 2007.

"Optimizing Thermal Design of Data Center Cabinets with a New Multi-Objective Genetic Algorithm", G. Li, M. Li, S. Azarm, J. Rambo and Y. Joshi, **Distributed and Parallel Database**, *Special Issue on High Density Data Centers*, Vol. 21, pp. 167-192, 2007.

"Airflow Distribution Through Perforated Tiles in Close Proximity to Computer Room Air-Conditioning Units," J. Rambo, G. Nelson, and Y. Joshi, **ASHRAE Transactions**, Vol. 113, pp. 124-136, 2007.

"A POD-based System-level Thermal Modeling Methodology for Shipboard Power Electronics Cabinets," S. I. Haider, L. Burton, Y. Joshi, **Heat Transfer Engineering**, Vol. 29, pp. 198-215, 2008 (Invited Paper).

"Multi-scale Thermal Modeling Methodology for Thermoelectrically Cooled Electronic Cabinet," Q. Nie, Y. Joshi, **Numerical Heat Transfer A**, Vol. 53, pp. 225-248, 2008.

"Reduced order modeling and experimental validation of steady turbulent convection in connected domains", Qihong Nie, Yogendra Joshi, **International Journal of Heat and Mass Transfer**, Vol: 51, pp.6063-6076, 2008.

"The Thermal Design of a Next Generation Data Center: A Conceptual Exposition", Emad Samadiani, Yogendra Joshi, Farrokh Mistree **Transactions of the ASME Journal of Electronic Packaging**, Vol: 130, 041104, 2008.

"Energy Efficient Thermal Management of Data Centers Via Open Multi-Scale Design: A Review of Research Questions and Approaches", E. Samadiani, Y. Joshi, and F. Mistree, **J. Enhanced Heat Transfer**, 2008 (Accepted).

"Multi-Parameter Model Reduction in Multi-Scale Convective Systems", Samadiani, E., and Joshi, Y., **Int. J. Heat Mass Transfer**, Vol. 53, pp. 2193-2205, 2010.

"Numerical Modeling of Perforated Tile Flow Distribution in a Raised-Floor Data Center", E. Samadiani, J.D. Rambo, and Y. Joshi, **ASME Transactions J. Electronic Packaging**, 2010 (accepted)

"Reduced Order Thermal Modeling of Data Centers via Proper Orthogonal Decomposition-A Review", E. Samadiani, Y. Joshi, **Int. J. Num. Methods for Heat and Fluid Flow**, Vol. 20, Issue 5, 2010 (in press)

"Proper Orthogonal Decomposition for Reduced Order Thermal Modeling of Air Cooled Data Centers," E. Samadiani, Y. Joshi, **ASME Transactions J. Heat Transfer**, Vol. 132, pp. 0714021-07140214, 2010

"Adaptable Robust Design of Multi-Scale Convective Systems Applied to Energy Efficient Data Centers", Emad Samadiani, Yogendra Joshi, Janet K. Allen, Farrokh Mistree, **Numerical Heat Transfer, Part A: Applications**, Vol. 57, pp. 69 – 100, 2010

"Coordinated Optimization of Cooling and IT Power in Data Centers", Emad Samadiani, Hrishikesh Amur, Bhavani Krishnan, Yogendra Joshi, Karsten Schwan, **ASME Transactions J. Electronic Packaging**, 2010 (accepted)

"Reduced Order Thermal Modeling of Multi-scale Microsystems", Y. Joshi, **ASME Transactions J. Heat Transfer**, 2010 (Presented as Keynote Paper at the International Heat Transfer Conference, Washington, D.C., August, 2010)

#### **Refereed Conference Presentations With Published Proceedings:**

"Computational Simulations of Server Room Cooling – a Parametric Study, Madhavan", N. Poyyapakkam, Yogendra K. Joshi, Proceedings of the ThermicConference, Madrid, Spain, October 2002.

"Multi-scale Modeling of High Power Density Data Centers", Jeffrey D. Rambo and Yogendra K. Joshi, InterPack 2003, Maui, Hawaii, July 2003.

"Supply Air Distribution From a single Air handling Unit in a Raised Floor Plenum Data Center", J.D. Rambo, and Y. Joshi, 6<sup>th</sup> ISHMT/ASME Conference, Kalpakkam, India, January 2004.

"Reduced Order Modeling of Steady Turbulent Flows Using the Proper Orthogonal Decomposition (POD)," Jeffrey Rambo and Yogendra Joshi, Summer Heat Transfer Conference, San Francisco, July 17-22, 2005.

"Towards Sustainable Design of Data Centers: Addressing the Lifecycle Mismatch Problem," N. Rolander, J.D. Rambo, Y. Joshi, and F. Mistree, Summer Heat Transfer Conference, San Francisco, July 17-22, 2005.

"Multi-scale Thermal Modeling Methodology for Electronics Cabinets," Q. Nie and Y. Joshi, *Proceedings of IThERM 2006*, San Diego, California, June 2006.

"A Reduced Order Modeling Framework for Thermal Modeling of Shipboard Power Electronics Cabinets," S. I. Haider, L. Burton, Y. Joshi, *9th Joint AIAA/ASME Thermophysics and Heat Transfer Conference*, San Francisco, California, June 5-8, 2006

"Reduced-Order Modeling Of Turbulent Flows In Multiscale Domains," J. Rambo and Y. Joshi, 13<sup>th</sup> International Heat Transfer Conference, Sydney, Australia, August, 2006,

Multi-scale Thermal Modeling of Microsystem Enclosure," Q. Nie and Y. Joshi, 17<sup>th</sup> International Symposium on Transport Phenomena, Toyama, Japan, September 2006.

"The Thermal Design of a Next Generation Data Center: A Conceptual Exposition," E. Samadiani, Y. Joshi, and F. Mistree, Thermal Issues in Emerging Technologies I (Theta1), Cairo, Egypt, January 2007.

"Airflow Distribution through Perforated Tiles in Close Proximity to Computer Room Air-Conditioning Units", J. Rambo, G. Nelson, and Y. Joshi, ASHRAE Summer Meeting, Long Beach, California, July 2007.

"Numerical Modeling Of Perforated Tile Flow Distribution In A Raised-Floor Data Center", E. Samadiani, J. Rambo, Y. Joshi, ASME InterPack Conference, July 8-12, 2007, Vancouver, British Columbia, CANADA

"Reduced Modeling Based Robust Thermal Design of Energy Efficient Data Centers," Y. Joshi, E. Samadiani, F. Mistree, International Symposium on Transport Phenomena (ISTP-18), Daejeon, South Korea, August 2007

"Energy Efficient Thermal Management of Data Centers Via Open Multi-Scale Design: A Review of Research Questions and Approaches" , Yogendra Joshi, Emad Samadiani, 19<sup>th</sup> National & 8<sup>th</sup> ISHMT-ASME Heat and Mass Transfer Conference, January 3 - 5, 2008, JNTU Hyderabad, India, (**Keynote paper and presentation**)

"Use of Airside Economizer for Data Center Thermal Management", A. Kumar and Y. Joshi, Thermal Issues in Emerging Technologies- Theory and Applications (Theta2), Cairo, Egypt, Dec. 17-20, 2008 (**Keynote paper and presentation**).

"Reduced Order Thermal Modeling of Data Centers via Distributed Sensor Data", E. Samadiani, Y. Joshi, H. Hamann, M. K. Iyengar, S. Kamalsy, J. Lacey, InterPACK '09, San Francisco, CA, 19-23 July, 2009 (**Best Paper Award**).

"Data Center Cooling Optimization – Ambient Intelligence Based Load Management (AILM)", A. Somani, Y. Joshi, 2009 ASME Summer Heat Transfer Conference, July 19-23, 2009, San Francisco, California

"CRAC Heat Exchanger Response To Step Change In Chilled Water Flowrate", Shawn P. Shields, Yogendra K. Joshi, Michael Patterson, Michael Meakins, 2009 ASME Summer Heat Transfer Conference, July 19-23, San Francisco, California, 2009

"Reduced Order Thermal Modeling of Data Centers Via Proper Orthogonal Decomposition – A Review", Y. Joshi and E. Samadiani, First International Conference on Computational Methods for Thermal Problems, Napoli, Italy, September 8-10, 2009 (**Keynote paper and presentation**).

