
February 2007

Rock River Valley Section

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Event



Sense

The Institute of Electrical and Electronic Engineers, Inc.

0.1 Horsepower and 0 to 5 GHz in 50 Picoseconds: The Challenges in Delivering Power to Tomorrow's Microelectronics

Plus EIGERlab Tour (6:00-6:30pm)

WHEN Thursday, February 22, 2007

WHERE

EIGERlab, (605 Fulton Avenue, Rockford, IL, 61103, phone: 815-965-3522) — From I-90 take Business 20, (East State St. exit), proceed west to Perryville Road, north on Perryville to Springcreek, west on Springcreek across river to Cumberland (Springcreek becomes Auburn west of the Rock River), north on Cumberland (first light past river) to Fulton, west on Fulton to Douglas, north on Douglas and follow signs...<http://www.eigerlab.org/contact.htm>

AGENDA

6:00 PM	Networking/Tour
6:30 PM	Dinner
7:30 PM	Presentation

PROGRAM

The continued increase in power and speed requirements of microprocessors and other ASICs present new challenges for delivering power. While power integrity often brings images to mind of in-depth decoupling schemes, resistance and inductance also play an increasingly significant role. Besides the concern of efficiency in the power distribution system (PDS), resistance must be controlled to ensure the compensation circuitry of the voltage regulator can adequately maintain the voltage within specified limits. Parasitic inductance limits the ability

to draw current from various locations in the PDS, resulting in the need not only for choosing the values of decoupling capacitors, but also for judiciously placing the capacitors so they can be effective. This presentation will facilitate a discussion of the various parts of the PDS, and how decisions can be made to ensure the smooth operation of power delivery. After the complete power distribution system is discussed, a brief discussion on how various parts may play a role in EMI will follow.

SPEAKER

David Hockanson, Ph.D.,

is a Senior Staff Engineer with the EMC Design group of Sun Microsystems, Inc., and Distinguished Lecturer, IEEE EMC Society. He is responsible for developing novel solutions to electromagnetic compatibility (EMC) issues that can be implemented confidently in early design stages to ensure compliance to worldwide EMC regulations without costly late-stage system changes. He also serves as a troubleshooter for Sun and OEM designs should EMC issues arise.



David received his Ph.D. in Electrical Engineering from the University of Missouri-Rolla. He was a National Science

Foundation Fellow during his tenure as a graduate student, and came to Sun as a Member of Technical Staff after completing his doctoral program in 1997. Early responsibilities were centered around ensuring that Sun's products met the requirements set by worldwide regulatory agencies. In 2003, he began focusing on determining more effective means of complying through physics-based design techniques employed on chips, boards, and chassis.

MEAL INFORMATION

Dinner menu: Buffet featuring vegetables and chicken. The costs are: member and student non-members: \$5, non-member: \$10, and student members: \$2. Please make your **dinner reservations by calling Ginger at 815-394-5696 or sending her an email (ginger.spinasantahs.utc.com) by Monday, February 19, at 5pm.** Please include the following information: your name, phone number, email address, IEEE member number, and choice of dinner entrée. Unemployed members may call one of the officers for special arrangements.

NOTE

The meeting is open to the general public. You need not be an IEEE member. Guests are welcome. Please call Ginger at 815-394-5696 for questions.

Rockford NASA Astronaut Janice Voss to Speak at Rock Valley College February 20

Students and guests will hear that the sky (or outer space) is truly the limit for the creators, builders and dreamers of tomorrow at the Engineering Tech College & Career Night at Rock Valley College on Tuesday, February 20.

The special guest speaker for the evening is Astronaut Janice Voss. Ms. Voss, formerly of Rockford, is a graduate of Purdue University with a degree in engineering science. Dr. Voss has two degrees from the Massachusetts Institute of Technology (MIT)—a master's in electrical engineering and a doctorate in aeronautics. She became an astronaut in 1991. Dr. Voss has logged more than 49 days in space on five flights traveling more than 18.8 million miles and 779 Earth orbits. She is currently the Science Director for the Kepler spacecraft at the NASA Ames Research Center. Once launched, the Kepler Spacecraft will be looking for Earth-sized planets around distant stars. She will speak beginning at 7 p.m. in the Rock Valley College Student Center atrium, on the main campus at 3301 N. Mulford Rd.

From 5:30 - 8 p.m., that same night, students will be invited to the RVC Woodward Technology Center to discover career opportunities, as nearly a dozen universities and colleges will be available to talk about their engineering programs, including Michigan Technical University, Purdue University, Northern Illinois University, Morrison Institute of Technology, Illinois Institute of Technology, Milwaukee School of Engineering and Rock Valley College. Representatives from professional engineering societies, including the IEEE, will also be on hand to talk about fields in engineering.

This Rock Valley College-hosted event is in celebration of National Engineering Week, designed to encourage engineering exploration among students in the region.

In addition, dozens of high school teams, led by math and science teachers, will participate in a great day of fun and learning at the fifth annual Bridge Building Competition on Friday, February 23. Taking place from 8 a.m. to noon at the RVC Stenstrom Center for Career Education, 4151 Samuelson Road, the high school juniors and seniors will have one hour to construct a truss bridge made only from wood sticks and super glue. NIU engineering students will load test the bridges to determine which is the strongest. High school freshmen and sophomores, meantime, will have an opportunity to build exciting electronics projects such as radios, burglar alarms and doorbells, under the guidance of an RVC Engineering professor.

For more information on these events, please contact Linda Auman, RVC Tech Prep Interim Director, at 815 921-3186.

This week-long "Discover Engineering Week" celebration also includes the "Discover Engineering! Egg Drop Extravaganza" at the Rockford Public Library on Saturday, February 17, and "Discover Engineering" fair on Saturday, February 24 at the Discovery Center Museum.

Rock Valley College's Engineering Week events are coordinated in conjunction with Discovery Center Museum, Rockford Public Library, Rockford Area Ventures, Society of Automotive Engineers, American Society of Quality, International Society of Professional Engineers, and the Institute of Electrical and Electronic Engineers, Inc.

January RRVS Meeting Recap

The presentation was delivered Dr. Giri Venkataramanan, Director of the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), University of Wisconsin - Madison, on Thursday, January 25th. The talk described the vast business opportunity available to companies who can supply things that are needed and affordable to the world's poor. Some successful business strategies oriented toward the enormous world poor population were presented. The potential useful technologies included small power systems with renewable sources and various other high efficiency systems. The challenges associated with manufacturing and distributing technological products to the worlds poor were discussed.

March RRVS Meeting Preview

In this seminar, different types of hybrid and fuel cell vehicle strategies and their operation for on-board power generation in transportation systems will be described. A comparison of architectures of hybrid propulsion systems based on internal combustion engines – battery, and hybrids based on fuel cells - will be presented. The associated power electronics and control strategies will be explained. The use of Solid Oxide fuel cells for on-board power generation in transportation applications will also be presented. Future technology trends and strategies will be discussed.

Submissions to *Event Sense*

Send articles and job ads to the *Event Sense* editor, Bob Parro, via e-mail. Please make submissions by the twenty-fifth of the month. All submissions are subject to editing for style, clarity, and space considerations.

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The Rock River Valley Section gratefully acknowledges the following companies and university for supporting Section Officers:

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Rock River Valley Section
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RRVS Calendar

- February National Engineer's Week** **February 20**
Rockford Astronaut Janice Voss & IEEE booth at Rock Valley College, Rockford, IL
- February RRVs Section Meeting** **February 22**
"0.1 Horsepower and 0 to 5 GHz in 50 Picoseconds: The Challenges in Delivering Power to Tomorrow's Microelectronics" at EIGERlab, Rockford, IL
- March RRVs Section Meeting** **March 8**
"Fuel Cells for Transportation and Stationary Power Generation" at Rock Valley College, Rockford, IL
- April RRVs Section Meeting** **April 26**
TBD at Rock Valley College, Rockford, IL



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