

September 2019

Event

Rock River Valley Section
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Sense

The Institute of Electrical and Electronic Engineers, Inc.

IEEE RRV Section, Computer and Controls Chapter Meeting
SERVING IEEE MEMBERS OF NORTH CENTRAL ILLINOIS AND SOUTH CENTRAL WISCONSIN

WHEN Thursday, September 19, 2019

WHERE

Rock Valley College
Woodward Tech Center
Room: WTC1308
3301 North Mulford Road
Rockford, IL 61114

AGENDA

6:00 PM Networking
6:30 PM Dinner
7:15 PM Presentation



Next-Generation Smart Grids: Synchronized and Democratized (SYNDEM) Smart Grids

Dr. Qing-Chang Zhong

IEEE Fellow, Professor at Illinois Institute of Technology, Chicago

Power systems are going through a paradigm shift. The centralized large facilities are being replaced by millions of widely dispersed non-synchronous relatively small renewable or alternative power plants, plug-in EVs, and energy storage units. Moreover, the majority of loads are expected to actively take part in the grid regulation in the same way as suppliers do. In this lecture, the SYNDEM (meaning synchronized and democratized) grid architecture, together with its technical route to enable this paradigm shift, will be presented. It will be shown that the synchronization mechanism of conventional synchronous machines, which has underpinned the power systems for over 100 years, can continue playing its fundamental role in power systems. It will empower all power electronics-interfaced suppliers and loads to behave like virtual synchronous machines so that they can take part in the regulation of system frequency and voltage, in the same way as conventional synchronous machines do. This will unify the integration and interaction of all players with the grid. It will also release the communication infrastructure from low-level control and open up the prospect of achieving autonomous operation for power systems. This holistic solution could considerably enhance the stability, scalability, operability, security, reliability and resiliency of the next-generation smart grid.

Dr. Qing-Chang Zhong, Fellow of IEEE and IET, is the Max McGraw Endowed Chair Professor in Energy and Power Engineering and Management at Department of Electrical and Computer Engineering, Illinois Institute of Technology, Chicago, USA, and the Founder of Syndem LLC, Chicago, USA. He is a world-leading multidisciplinary expert in control, power electronics, and power systems, having been recognized as a Distinguished Lecturer of the IEEE Power and Energy Society, the IEEE Control Systems Society and the IEEE Power Electronics Society. Before joining Illinois Institute of Technology, he was the Chair Professor in Control and Systems Engineering at The University of Sheffield, UK, where he built up a \$5M+ research lab dedicated to the control of energy and power systems and attracted the support of Rolls-Royce, National Instruments, Texas Instruments, Siemens, ALSTOM, Turbo Power Systems, Chroma, Yokagawa, OPAL RT and other organizations. He was an Associate Editor for several journals in control and power engineering, including four IEEE Transactions and has (co-) authored three research monographs.

MEAL INFORMATION

Dinner entrée will feature your choice of Vegetarian or Non-Vegetarian meals.

Members & Student Members: FREE,
Non-members: \$10,
Student non-members: \$5
Presentation only: FREE

Please register online at

<https://events.vtools.ieee.org/m/204656>

or by emailing Diane Sennebogen at diane.brock@utas.utc.com by Thursday, Sept 19 at 1 pm. Please include the following: name, phone number, email address, and IEEE member number. The meeting is open to the general public.

IEEE Day Banquet Save the Date



IEEE **2019** **DAY**™
Leveraging Technology for a Better Tomorrow

The Rock River Valley Section will be hosting an IEEE Day celebration banquet on October 4th.

Time: 6pm to 10 pm

Location: Franchesco's
7128 SPRING CREEK RD
ROCKFORD, IL 61107

Cost: **Members and Spouse/Companion** **\$10 per person**
Non-Members and guests **\$30 per person**

The event will include:

- ◆ Networking
- ◆ Dinner
- ◆ Guest Speaker(s)
- ◆ Entertainment and prizes!

Save the date. More information will be provided soon along with a registration link.

IEEE Rock River Valley Section 2019 Calendar of Events

September 26: RRVS Section Meeting

October 4: IEEE Day Banquet

October 31: RRVS Section Meeting

November 14: RRVS Section Meeting at NIU

*Dates and locations are subject to change

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815-226-4299



Terry Johnson
Vice Chair
Terry.Johnson@utas.utc.com
815-394-2447



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aevandergrift@ieee.org
815-226-2518



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abaker@ieee.org



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J.solanki@ieee.org
815-394-5675



Joe Etminan
IAS Chapter Chair
joetminan@ieee.org
815-558-0007



Mark Harris
PELS Chapter Chair
m.harris@ieee.org
815-226-6098



Alkesh Patel
Computer & Controls
Chapter Chair
Alkesh.patel@ieee.org



Jamal Shafii
EMC Chapter Chair
jamalshafii@ieee.org
815-394-5676



Steve Davidson
EMIC Chapter Co-Chair
steve.davidson@ieee.org



Larry Wachowiak
Life Members Chair
L.wachowiak@ieee.org



Marjan Shirani
WIE Chair
Marjan.shirani@hs.utc.com
815-394-2420



Prof. Don Zinger
NIU St Br Counselor
Educational Act. Chair
d.zinger@ieee.org
815-753-0540



Eduardo Vasquez
Young Professionals
Chair
evasquez@ieee.org



Bob Parro
Section Advisor
B.parro@ieee.org



Gary Blank
Section Advisor
G.L.Blank@ieee.org

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Established 1992



Joint Computer/Control Systems Society Chapter
Established 1995



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Established 1996



Electromagnetic Compatibility Society Chapter
Established 2007

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