



**POWER & ENERGY SOCIETY
INDUSTRY APPLICATIONS SOCIETY
LIFE MEMBERS AFFINITY GROUP
NEW YORK SECTION**



You are invited to a meeting of the PES & IAS NY Chapter and the NY LMAG on:

Role of Physiology-based Models in Critical Care Medicine

Tuesday, June 28, 2016

THE PRESENTATION:

Critical Care Medicine can substantially benefit from advanced engineering methodologies. Making a more impactful and timely clinical decision can mean life or death for a patient. Mathematical models offer a means to attend to this need. Data-based, rules-based, and mechanistic models can individually, or in combination, enhance clinical decisions. This talk briefly presents examples of such models, and puts the spotlight on mechanistic models, in an industrial R&D environment. Using such models in an intensive care unit (ICU) setting in real-time can offer a glimpse of an impending disease or of the health status of an organ to a clinician already burdened with many patients and therapy devices to manage. Individualizing a mechanistic model to a specific patient requires parameter estimation or system identification techniques. These can be challenging tasks in view of the number of parameters to optimize, and of the nonlinear and time-varying nature of physiological systems. We began to scratch the surface of this important yet difficult task by applying real-time parameter estimation to ICU respiratory therapy. Results are encouraging, but a lot still need be done in order to help elevate critical care medicine one notch higher.

THE SPEAKER: DR. NICOLAS W. CHBAT, Principle Scientist, Philips Research North America

Dr. Nicolas W. Chbat is Principal Scientist at Philips Research North America. He leads efforts in clinical decision support for cardiopulmonary medicine. He has established a laboratory heading two clusters in critical care and ventilation & anesthesia, and is Co-Director of the Center of Excellence in Critical Care Innovation (NYP/CUMC and Philips.) Dr. Chbat holds 50+ issued and filed patents, and invention disclosures, 45+ publications, and one book. Dr. Chbat received his PhD from Columbia University in 1995, when he then joined General Electric Global Research Center (GE GRC) for six years. In 2000, he won the Dushman Award, GE GRC's Highest Technical Team Achievement Award. Dr. Chbat then spent four years at the Mayo Clinic, Division of Engineering, where he worked on critical care projects for the intensive care unit. He also served as Adjunct Faculty at the Mayo Graduate School, where he won the 2005 Best Teacher of the Year Award. Dr. Chbat was awarded three governmental grants (NIH and CMS) totaling more than \$17M as co-PI in the two year period 2010-2012. He is the recipient of the 2013 Philips Research Top Five Innovation Award, and also the recipient of the 2013 IEEE EMBS Technical Achievement Award.

ALL ARE INVITED – PLEASE POST

RSVP: <https://meetings.vtools.ieee.org/m/39987>

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FOR SECURITY REASONS: NO WALK-INS!

When: 5:00 pm — Starts-Refreshments & Program

7:00 pm — Program Ends

Where:

Con Edison

Edison Room, 19th Floor

4 Irving Place, New York, NY 10003

Nearest Subway: 14th St/Union Sq.

This program will be awarded IEEE Continuing Education Units.

