IEEE PES AMPS TASS Subcommittee 2022 Report

Current Officers:

- Chair: Reynaldo Ramos, Southern Company, US, rramos@southernco.com
- Vice-Chair: Xiaoyu Wang, Carleton University, Canada, xiaoyuw@carleton.ca
- Secretary and Webmaster: Yingwei Huang, BC Hydro, Canada, yingwei.huang@bchydro.com
- Technical Committee Program Chair: Miao Fan, Five Dimensions Energy, US, fanmiao@ieee.org

Website URL: http://sites.ieee.org/sa-tass/

List of active WGs, and the Chairs

Working Groups

- **WG1: Modeling and Analysis of System Transients using Digital Programs**
  Chair: Xiaoyu Wang, Carleton University, Canada, XiaoyuWang3@cunet.carleton.ca

Task Forces in WG1:

TF Name	Chair	Email
Frequency Domain Methods for Electromagnetic Transient Studies	Pablo Gomez	pablo.gomez@wmich.edu
Real-Time Simulation of Power & Energy Systems	Omar Faruque	faruque@caps.fsu.edu
Interfacing Techniques for Simulation Tools in Smart Grid	Qiuhua Huang	qiuhua.huang@ieee.org
Dynamic Average Modeling Techniques	Ali Davoudi	avoudi@uta.edu
EMT-type Modeling of Converter-based Renewable Energy Resources	Jean Mahseredjian	jean.mahseredjian@polymtl.ca
Dynamic Phasor Modeling Technique	Shaahin Filizadeh	Shaahin.Filizadeh@umanitoba.ca
Use of Real-Code in EMT Models for Power System Analysis	Garth Irwin	gdi@electranix.com
Multi-Energy System Simulation	Peter Palensky	P.Palensky@tudelft.nl
Modeling Subsynchronous Oscillations in Wind Energy Interconnected Systems	Yunzhi Cheng	Yunzhi.Cheng@ercot.com
EMT Simulation of Large Power Systems	Yi Zhang	yzhang@rtds.com

- **WG2: Ferroresonance**
  Chair: Bruce Mork, Michigan Technological University, bamork@mtu.edu

- **WG3: Geomagnetic disturbance (GMD) and Geomagnetic ally Induced Current(GIC)**

Chair: Luis Marti, L. Marti Consulting, Canada, luis@lmarticonsulting.com

- **WG4: Field Measured Overvoltages and Their Analysis**
  Chair: Ilhan Kocar, Polytechniques Montreal Univeristy, ilhan.kocar@polymtl.ca

- **Task Force on Distributed Energy Resource Islanding Detection**
  Chair: Xiaoyu Wang, Email: xiaoyuw@carleton.ca

Activities at IEEE PES GM 2022 (Denver, CO)

Panel Sessions

Modeling, Measurement, and Risk Assessment of Nuisance Distributed Energy Resource Islanding

Session Type:	Panel Session
Time:	Wednesday, July 20, 2022 3:00 PM-5:00 PM
Room:	Governor's Square 16
Committee:	(AMPS) Transient Analysis and Simulation
Chair 1:	Alexandre Nassif; LUMA Energy
Chair 2:	Xiaoyu Wang; Carleton University

Resonances and Oscillations in Wind Farms and Solar PVs

Session Type:	Panel Session
Time:	Wednesday, July 20, 2022 5:00 PM-7:00 PM
Room:	Governor's Square 16
Committee:	(AMPS) Transient Analysis and Simulation
Chair 1:	Lingling Fan; University of South Florida

Co-Simulation of Power and Energy Systems

Session Type:	Panel Session
Time:	Wednesday, July 20, 2022 3:00 PM-5:00 PM
Room:	Governor's Square 15
Committee:	(AMPS) Transient Analysis and Simulation

Chair 1:	Trevor Hardy; Pacific Northwest National Laboratory
Chair 2:	Peter Palensky; TU Delft

Accurate Electromagnetic Transient Type Modeling of Inverter Based Resources

Session Type:	Panel Session
Time:	Wednesday, July 20, 2022 5:00 PM-7:00 PM
Room:	Governor's Square 15
Committee:	(AMPS) Transient Analysis and Simulation
Chair 1:	Aboutaleb Haddadi; Electric Power Research Institute

Combining physics-based and data-driven modeling and simulation for power systems

Session Type:	Panel Session
Time:	Thursday, July 21, 2022 4:00 PM-6:00 PM
Room:	Plaza Court 7
Committee:	(AMPS) Transient Analysis and Simulation
Chair 1:	Qiuhua Huang; Utilidata
Chair 2:	Hantao Cui; Oklahoma State University

Committee Events: (IEEE PES GM 2022)

(AMPS) Transient Analysis and Simulation Subcommittee (TASS)

Date	Time	Title	Room
Monday, July 18, 2022	4:00 PM-5:00 PM	TASS EMT Simulation of Large Power Systems TF	Century
Monday, July 18, 2022	3:00 PM-4:00 PM	TASS Interfacing Techniques for Simulation Tools TF	Century
Wednesday, July 20, 2022	12:00 PM-1:00 PM	TASS Modeling Subsynchronous Oscillations in Wind Energy Interconnected Systems TF	Denver
Wednesday, July 20, 2022	1:00 PM-2:00 PM	TASS Geomagnetic disturbance and Geomagnetically Induced Current WG	Denver
Wednesday, July 20, 2022	3:00 PM-5:00 PM	TASS Distributed Energy Resource Islanding Detection TF	Governor's Square 16

Wednesday, July 20, 2022	4:00 PM-5:00 PM	TASS Frequency Domain Methods for Electromagnetic Transient Studies TF	Colorado
Wednesday, July 20, 2022	4:00 PM-5:00 PM	TASS Power Equipment Vulnerability to GIC TF	Columbine
Thursday, July 21, 2022	8:00 AM-9:00 AM	TASS Dynamic Average Modeling Techniques TF	Colorado

Webinar:

Use of Real-Code in EMT Models for Power System Analysis

Session Type:	Webinar
Time:	February 15, 2022
Committee:	(AMPS) Transient Analysis and Simulation
Chair 1:	Garth Irwin; Electranix Corporation
Chair 2:	Deepak Ramasubramanian; Carleton University
Summary:	defined a second revision of the real code DLL modeling format/standard to address the key limitations/issues addressed in the initial release.

Modeling Subsynchronous Oscillations in Wind Energy Interconnected Systems

Session Type:	Webinar
Time:	July 6, 2022
Committee:	(AMPS) Transient Analysis and Simulation
Chair:	Yunzhi Cheng; ERCOT
Summary:	5 panelists conducted the webinar: Lingling Fan, Yunzhi Cheng, Jay R. Ramamurthy, Jan Shair and Zhixin Miao. 833 people registered the webinar and 367 attended the webinar at real time. The webinar recording and slides are now available at the PES resource center. https://resourcecenter.ieee-pes.org/education/webinars/PES_ED_WEB_IRS_070622_SLD.html.

Publications and Technical reports:

- **TF: Real-Time Simulation of Power & Energy Systems**
    - Giovanni De Carne, Georg Lauss, Mazheruddin H Syed, Antonello Monti, Andrea Benigni, Shahab Karrari, Panos Kotsampopoulos, Md Omar Faruque, "On Modeling Depths of Power Electronic

Circuits for Real-Time Simulation-A Comparative Analysis for Power Systems", *IEEE Open Access Journal of Power and Energy*, Vol. 9, Pages 76-87.

- **TF: Frequency Domain Methods for Electromagnetic Transient Studies**

  - M. Shafieipour, M. Nazari, F. P. Dawalibi, S. Fortin, A. Tatematsu, J. De Silva, and P. Gómez, "Full-Wave 3-D Transient Analysis with Method of Moments and Numerical Laplace Transform Including Resistive Non-Linear Elements", *IEEE Trans. Power Delivery*, to be published, 2022.

  - L. J. Casta?on Alcalá, J. L. Naredo, J. R. Zuluaga, E. Ba?uelos-Cabral, P. Gomez, "Laplace Transform Inversion through the Theta Algorithm for Power-System EMT Analysis", *ELSEVIER Electric Power Systems Research*, vol. 197, August 2021.

  - J. Hernández-Ramírez, J. Segundo-Ramirez, P. Gómez, M. Borghei, and M. Ghassemi, "Statistical Switching Overvoltage Studies of Optimized Unconventional High Surge Impedance Loading Lines via Numerical Laplace Transform", *IEEE Transactions on Power Delivery*, vol. 36. no. 4, August 2021.

  - P. Gomez, J. Segundo-Ramirez, "Frequency Domain Approach for Statistical Switching Studies: Computational Efficiency and Effect of Network Equivalents", *ELSEVIER Electric Power Systems Research*, vol. 196, July 2021.

  - J. Hernández, J. Segundo, P. Gómez, M. Borghei, M. Ghassemi, "Electromagnetic Transient Performance of Optimally Designed High Surge Impedance Loading Lines", IEEE PES General Meeting, Montreal, Canada, August 2020.

- **TF: Modeling Subsynchronous Oscillations in Wind Energy Interconnected Systems**

  - Technical Report “Wind Energy Systems Sub-Synchronous Oscillations: Events and Modeling (TR80)” https://resourcecenter.ieee-pes.org/publications/technical-reports/PES_TP_TR80_AMPS_WSSO_070920.html

  - Cheng, Yunzhi, Lingling Fan, Jonathan Rose, Fred Huang, John Schmall, Xiaoyu Wang, Xiaorong Xie et al. "Real-world subsynchronous oscillation events in power grids with high penetrations of inverter-based resources." *IEEE Transactions on Power Systems*, to be published, 2022.

- **TF: Dynamic Phasor Modeling Techniques**

  - Special Report “Modeling and Simulation of Power Systems Using Dynamic Phasors”.

- **Other Subcommittee Activates**

  TASS subcommittee will identify experts in the field of traveling wave protection to support AMPS committee sponsorship of an IEEE standard development

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