

# Federico Milano

School of Electrical & Electronic Engineering  
Univeristy College Dublin  
Belfield, Dublin 4, Ireland  
Tel. (+353) 1 716 1844  
Fax. (+353) 1 283 0583  
federico.milano@ucd.ie  
<http://faraday1.ucd.ie>

- CURRENT POSITION**      **Professor of Power Systems Control and Protections (tenure)**, University College Dublin, Belfield, Dublin 4, (since June 2013).
- EDUCATION**      ♦ **University of Genova**, Genova, Italy.  
Ph.D. in Electrical Engineering, June 2003.  
Homologated to the Spanish Ph.D. degree, October 2005.  
Thesis title: *Pricing System Security in Electricity Market Models with Inclusion of Voltage Stability Constraints*.
- ♦ **University of Genova**, Genova, Italy.  
Laurea [M.Sc.] in Electrical Engineering, March 1999.  
Homologated to the Spanish Industrial Engineering degree, February 2007.  
Thesis title: *La Stabilità di Tensione dei Sistemi Elettrici: Metodologie di Valutazione e Correlazioni tra Procedure Statiche e Dinamiche*.
- LANGUAGES**      Italian, English, Spanish.
- CURRENT INTERESTS**      Power systems modelling, control and stability analysis, distributed and renewable generation, bifurcation theory, parallel computing.
- WORK EXPERIENCE**      ♦ **Associate Professor (tenure)**, University of Castilla-La Mancha, Spain, (November 2007 – May 2013).
- ♦ **Associate Professor**, University of Castilla-La Mancha, Spain, (February 2007 – November 2007).
- ♦ **Visiting Professor**, University of Castilla-La Mancha, Spain, (September 2003 – February 2007).
- ♦ **Teaching Assistant**, University of Genova, Italy, (March 2003 – June 2003)  
Course: Power System Analysis.
- ♦ **Visiting Scholar**, University of Waterloo, Canada, (September 2001 – December 2002)  
Research topic: Pricing System Security in Electricity Markets.
- TEACHING EXPERIENCE**      ♦ **Electrical Energy Systems**, Stage 2, Module coordinator, University College Dublin, Ireland, 2017 –
- ♦ **High Voltage and Protection Systems**, Stage 4, Module coordinator, University College Dublin, Ireland, 2016 – 2017.
- ♦ **Power System Dynamics & Control**, Stage 4, Module coordinator, University College Dublin, Ireland, 2013 –
- ♦ **Power System Stability Analysis**, Stage 4, Module coordinator, University College Dublin, Ireland, 2014 – 2016.
- ♦ **Power System Control**, Stage 4, Module coordinator, University of Castilla-La Mancha, Spain, 2012 – 2013.

- ◇ **Power System Analysis**, Stage 4, Module coordinator, University of Castilla-La Mancha, Spain, 2012 – 2013.
- ◇ **Power System Stability**, Master, Module coordinator, University of Castilla-La Mancha, Spain, 2011 – 2012.
- ◇ **Circuit Theory**, Stage 2, Module coordinator, University of Castilla-La Mancha, Spain, 2005 – 2006.
- ◇ **Power System Stability**, PhD, Module coordinator, University of Castilla-La Mancha, Spain, 2004 – 2010.
- ◇ **Electrical Machines**, Stage 3, Module coordinator, University of Castilla-La Mancha, Spain, 2003 – 2012.
- ◇ **Distribution Systems**, Stage 4, Module coordinator, University of Castilla-La Mancha, Spain, 2003 – 2007.
- ◇ **Power System Analysis**, Stage 4, Teaching Assistant, University of Genoa, Italy, 2001.
- ◇ **Control of Electrical Machines**, Stage 4, Teaching Assistant, University of Genoa, Italy, 2000.

RESEARCH  
PROJECTS  
(AS  
PRINCIPAL  
INVESTIGA-  
TOR)

- ◇ **Horizon 2020 – “Renewables in a Stable Electric Grid” (RE-SERVE)**. Topic: LCE-07-2016-2017. Research and Innovation Action. Funded by European Commission, 2016-2019.
- ◇ **SFI Investigator Programme – “Advanced Modelling for Power System Analysis and Simulation”**. Funded by Science Foundation Ireland, 2016-2021.
- ◇ **FP7 – Marie Curie Actions 2012, Career Integration Grant, “Modelling and Stability of Electric Power Systems considering Stochastic Processes and Distributed Control”**. Funded by European Commission, 2014-2017.
- ◇ **CICYT – ENE2012-31326, “Stochastic and Functional Differential Equations for Smart Grid Modelling, Stability Analysis and Control”**. Approved by Spanish Ministry of Education, 2012-2014.
- ◇ **“Real-time power flow analysis”**. Funded by Actility, France, 2011-2012.
- ◇ **“Commercial License and on-line assistance for the software application PSAT”**. Funded by Institute of Power Engineering, Gdańsk Division, Poland, 2011.
- ◇ **JCCLM – POI11-0148-1022, “Power system analysis through stochastic and functional differential equations”**. Approved by Junta de Comunidades de Castilla-La Mancha, 2011-2013.
- ◇ **CICYT – ENE 2009-07685, “Impact of renewable energy sources on the stability of electric power systems”**. Funded by Spanish Ministry of Science and Innovation, 2010-2012.
- ◇ **“Network Equivalents”**. Funded by ABB AB Corporate Research, Västerås, Sweden, 2006-2007.

RESEARCH  
PROJECTS  
(AS COLLAB-  
ORATOR)

- ◇ **“Energy Systems Integration Partnership Programme (ESIPP)”**, 2015-2019. Financed by SFI, Ireland. Co-Applicant since November 2015.
- ◇ **“Sustainable Electrical Energy Systems (SEES Cluster)”**, 2009-2017. Financed by SFI, Ireland. Co-PI since June 2013 and deputy director since March 2014.
- ◇ **“Switzerland 100% supplied from renewable energy sources till 2050”**. Funded by AXPO, Switzerland, 2010-2011.
- ◇ **JCCLM – PCI08-0102-1841, “Integration of renewable electric energy sources in a power system: Technical and economic impact”**. Funded by Junta de Comunidades de Castilla-La Mancha, 2008-2010.
- ◇ **CICYT – DPI 2006-08001, “Estrategias de producción, suministro y comercialización en mercados eléctricos mediante programación estocástica (EMEPE)”**. Funded by Spanish Ministry of Science and Innovation, 2007-2009.

- ◇ “Análisis de la red de energía eléctrica de Castilla - La Mancha y estudio del impacto en la misma de la integración de centrales eólicas y/o solares”. Funded by Junta de Comunidades de Castilla-La Mancha, 2006-2007.
- ◇ JCCLM – PBI-05-053, “Análisis de riesgo y seguridad en el suministro de energía eléctrica”. Funded by Junta de Comunidades de Castilla-La Mancha, 2005-2007.
- ◇ CICYT – DPI 2003-01362, “Respuesta óptima al mercado eléctrico por parte de productores, comercializadores y consumidores”. Funded by Spanish Ministry of Science and Innovation, 2004-2006.
- ◇ “Sviluppo di modelli FACTS per l’analisi di sicurezza ed indicatori di stabilità per il controllo del sistem elettrico”, 2001. Funded by CESI, Italy.
- ◇ “Sviluppo di modelli per l’analisi di sicurezza e di flessibilità delle reti di trasmissione. Linea di attività A: Valutazione delle potenzialità applicative delle misure di fasori per il controllo in tempo reale del sistema elettrico”. Funded by CESI, Italy, 2000.
- ◇ “Il sistema elettrico in regime di libero mercato: potenzialità di dispositivi FACTS nella gestione del sistema di trasmissione e metodologie di sintesi di equivalenti dinamici per studi di sicurezza”. Funded by ENEL, Italy, 2000.

SHORT STAYS ◇ KTH, Sweden, June 2011.

- ◇ Los Alamos National Laboratory, New Mexico, USA, July 2010.
- ◇ Universidad Centroamericana “José Simeón Cañas”, El Salvador, July 2008.
- ◇ Universidade Estadual de Campinas - UNICAMP, Brazil, November 2007.
- ◇ ETH Zürich, Switzerland, November 2006.
- ◇ Universidad Centroamericana “José Simeón Cañas”, El Salvador, July 2005.

INVITED SEMINARS

- ◇ “Smart Grid Simulation”, IEEE ISGT Latin America, Quito, Ecuador, 19th September 2017.
- ◇ “Power System Modelling with Inclusion of Stochastic Processes”, 1st PTI Workshop on Power System Modeling and Simulation, Itaipu Technological Park, Brazil, 2nd December 2016.
- ◇ “Modelling Frequency Variations in Power System Models for Transient Stability Analysis”, IV International Workshop on the Use of Synchrophasors in Power System, COPPE, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 29th November 2016.
- ◇ “Modelling and Stability Analysis of Power Systems with inclusion of Delays”, Universidad de Sevilla, Sevilla, Spain, 16th May 2016.
- ◇ “Power System Modelling with Inclusion of Stochastic Processes”, Università del Sannio, Benevento, Italy, 4th May 2016.
- ◇ “Impact of Volatility, Uncertainty and Frequency Regulation on Power System Frequency Distribution”, Workshop on Mathematical Sciences Collaboration in Energy Systems Integration, DTU, Lyngby, Denmark, 24-25th September 2015.
- ◇ “Semi-implicit DAE Formulation for Transient Stability Analysis”, Queen’s University, Belfast, UK, 4th September 2015.
- ◇ “Semi-implicit DAE Formulation for Transient Stability Analysis”, Electricity Research Centre, University College Dublin, Ireland, 16th June 2015.
- ◇ “Power System Modelling with Inclusion of Stochastic Processes”, Abengoa, Sevilla, Spain, 30th April 2015.
- ◇ “Impact of Time Delays on Power System Small-Signal Stability”, ETH Zürich, Switzerland, 17th March 2015.

- ◇ “Challenges for Power System Modelling and Simulation”, KTH, Sweden, 18th December 2014.
- ◇ “Impact of Time Delays on Power System Stability”, University of Perpignan, France, 10th September 2014.
- ◇ “Impact of Time Delays on Power System Stability”, Durham University, UK, 11th March 2014.
- ◇ “Challenges for Power System Modelling and Simulation”, University College Dublin, Ireland, 26th February 2013.
- ◇ “Power System Modeling, Analysis and Synthesis”, Tennet, Wernberg, Germany, 23rd January 2013.
- ◇ “Modeling Power Systems as Stochastic and Functional Differential Algebraic Equations”, KTH, Sweden, 6th December 2012.
- ◇ “Computer-based Power System Modeling for Restructured Power Systems and Smart Grids”, IV SBSE Conference, Goiânia, Brazil, 15th-18th May 2012.
- ◇ “Modeling Power Systems as Stochastic Algebraic Differential Equations”, University College Dublin, Ireland, 28th November 2012.
- ◇ “Modeling Power Systems as Stochastic and Functional Differential Algebraic Equations”, University of Toronto, Canada, 25th April 2012.
- ◇ “Computer-based Power System Modelling for Restructured Power Systems,” DTU, Technical University of Denmark, Denmark, 14th-16th September 2011.
- ◇ “Modelling and Stability Issues of Systems with Wind Parks and/or Energy Storage Devices,” Politecnico di Bari, Italy, 29th-30th September 2011.
- ◇ “Continuous Newton’s Method for Power Flow Analysis,” KTH, Sweden, 16th June 2011.
- ◇ “Continuous Newton’s Method for Power Flow Analysis,” Los Alamos National Laboratory, New Mexico, 29th June 2010.
- ◇ “Impacto de la Generación Eólica en la Red Eléctrica,” University of Castilla-La Mancha, Toledo, Spain, 27th November 2008.
- ◇ “Estabilidad de Tensión, Ángulo y Frecuencia en Sistemas de Energía Eléctrica,” Universidad Centroamericana “José Simeón Cañas”, El Salvador, 12th-19th July 2008.
- ◇ “Power System Dynamics and Stability,” University of Sevilla, Spain, 27th-29th November 2007.
- ◇ “OPF-based Security-driven Short-term Market Clearing Procedures,” University of Campinas, Brazil, 7th November 2007.
- ◇ “PSAT: A Free and Open Source Power System Analysis Toolbox,” University of Campinas, Brazil, 6th November 2007.
- ◇ “Recent & Current Research,” ETH Zürich, Switzerland, 7th November 2006.
- ◇ “Introduction to PSAT (Power System Analysis Toolbox),” ABB AB Corporate Research, Västerås, Sweden, 21st April 2006.
- ◇ “Análisis de Sistemas de Potencia en Ambiente de Mercados Eléctricos,” Universidad Centroamericana “José Simeón Cañas”, El Salvador, 25th-28th July 2005.

DIRECTION OF PHD AND MASTER STUDENTS ◇ Rafael Zárate Miñano, *Optimal Power Flow with Stability Constraints*, Ph.D. Thesis defended at the University of Castilla-La Mancha, 2010. Supervisors: A. J. Conejo and **F. Milano**.

◇ Manuel Marin, topic: *Parallel Computing for Power System Analysis*, Ph.D. candidate at UCD and University of Perpignan, France. Date of Viva Voce: December 11<sup>th</sup> 2015. Supervisors: D. Defour (University of Perpignan, France) and **F. Milano**.

- ◇ Fabiano Pallonetto, topic: *Load Demand Management*, Ph.D. candidate at UCD. Expected year of defence: 2018. Supervisors: D. Finn and **F. Milano**.
- ◇ Álvaro Ortega Manjavacas, topic: *Control and Stability of Energy Storage Devices*, Ph.D. candidate at UCD. Date of Viva Voce: February 24<sup>th</sup> 2017. Supervisor: **F. Milano**.
- ◇ Francesca Madia Mele, topic: *Power System Modelling with inclusion of Stochastic Processes*, Ph.D. candidate at UCD. Expected year of defence: 2018. Supervisor: **F. Milano**.
- ◇ Muyang Liu, topic: *Modelling and Stability Analysis of Power Systems with inclusion of Delays*, Ph.D. candidate at UCD. Expected year of defence: 2020. Supervisor: **F. Milano**.
- ◇ Guðrún Margrét Jónsdóttir, topic: *Modelling and Stability Analysis of Power Systems with inclusion of Stochastic Processes*, Ph.D. candidate at UCD. Expected year of defence: 2020. Supervisor: **F. Milano**.
- ◇ Mohammed Ahsan Adib Murad, topic: *Modelling and Stability Analysis of Power Systems modelled as Hybrid Differential-Algebraic Equations*, Ph.D. candidate at UCD. Expected year of defence: 2020. Supervisor: **F. Milano**.
- ◇ Tanveer Hussain, topic: *Discrete event-based modelling of smart grids*, Ph.D. candidate at UCD. Expected year of defence: 2021. Supervisor: **F. Milano**.
- ◇ Georgios Tzounas, topic: *Robust control of power systems with inclusion of time delays*, Ph.D. candidate at UCD. Expected year of defence: 2021. Supervisor: **F. Milano**.
- ◇ Taulant Kërçi, topic: *Dynamic Modelling and Stability Analysis of Energy Systemns*, Ph.D. candidate at UCD. Expected year of defence: 2021. Supervisor: **F. Milano**.

SOFTWARE DEVELOPMENT

- ◇ **PSAT**: Matlab-based routines for power system analysis. The main features of PSAT are as follows: power flow, continuation power flow, optimal power flow, small signal stability analysis, time domain simulation, phasor measurement unit (PMU) placement, complete graphical user interface, CAD for network design (Simulink library), and conversion of data files from several formats.  
Available at <http://faraday1.ucd.ie/psat.html>.  
The intellectual property of PSAT is registered in Spain (Reg. CR-78-08).
- ◇ **Dome**: Python-based routines for power system analysis. The main features of Dome are as follows: power flow, continuation power flow, small signal stability analysis, time domain simulation (DAE, delayed DAE and stochastic DAE), parallel computing, user defined models, and conversion of data files from several formats.  
Available at <http://faraday1.ucd.ie/dome.html>

PROFESSIONAL MEMBERSHIPS

- ◇ *IET Fellow*, since December 2017.
- ◇ *IET Member*, since November 2017.
- ◇ *IEEE Fellow*, since January 2016.
- ◇ *IEEE Senior Member*, 2009-2015.
- ◇ *IEEE Member*, 2004-2009.
- ◇ *IEEE Student Member*, 2002-2003.

COMMISSION OF TRUST

- ◇ Member of the Basil Papadias Award Committee, since 2017.
- ◇ Member of the IEEE PSOPE Award Committee, since 2017.
- ◇ Editor of *Technology and Economics of Smart Grids and Sustainable Energy*, Springer, since 2017.
- ◇ Member of the IEEE Power System Dynamic Performance Committee, since 2016.
- ◇ Chair of the IEEE PSOPE Subcommittee on Technologies & Innovation, 2015-2017.
- ◇ Editor of *IET Generation, Transmission & Distribution*, 2015-2017.

- ◇ Member of that Technical Programme Committee of the Power System Computation Conference (PSCC), since 2015.
- ◇ Member of the International Advisory Committee Member of the PowerTech Conference, since 2014.
- ◇ Head of Subject of Electrical Engineering, UCD, since 2014.
- ◇ Editor of Journal on Intelligent Industrial Systems, Springer, since 2014.
- ◇ Editor of Journal of Control, Automation and Electrical Systems, Springer, since 2013.
- ◇ Editor of IEEE Transactions on Power Systems, since January 2012 – December 2017.
- ◇ Editor of Simulation Modelling Practice and Theory, Elsevier, 2009-2014.

## Publications

### BOOKS

- ◇ **F. Milano** (editor), *Advances in Power System Modelling, Control and Stability Analysis*, IET, London, 352 pages, September 2016. ISBN: 978-1-78561-001-1
- ◇ **F. Milano**, *Power System Modelling and Scripting*, Springer, London, 556 pages, August 2010. ISBN: 978-3-642-13669-6
- ◇ A. J. Conejo, J. M. Arroyo, **F. Milano**, et al., *Instalaciones Eléctricas* (in Spanish), McGraw Hill, Madrid, 464 pages, May 2007. ISBN: 978-8-448-15639-8

### BOOK CHAPTERS

- ◇ H. Chen, J. Liu, J. Giri, S. Tam, M. Bryson, P. Panciatici, **F. Milano**, J. Zhou, S. Bartlett, S. K. Soonee, S. R. Narasimham, S. C. Saxena, K. V. M. Pawan Kumar, *Power System Operations*, in “Standard Handbook for Electrical Engineers”, 17th edition, editors S. Santoso and H. Wayne Beaty, McGraw Hill, to appear in 2018. ISBN: 978-1-259-64258-6
- ◇ R. Zárate-Miñano, **F. Milano**, *Modelling Power Systems with Stochastic Processes*, in “Advances in Power System Modelling, Control and Stability Analysis”, editor F. Milano, IET, London, September 2016.
- ◇ V. S. Bokharaie, R. Sipahi, **F. Milano**, *Small-signal stability and time-domain analysis of delayed power systems*, in “Advances in Power System Modelling, Control and Stability Analysis”, editor F. Milano, IET, London, September 2016.
- ◇ F. Bizzarri, A. Brambilla, **F. Milano**, *Shooting-based Stability Analysis of Power System Oscillations*, in “Advances in Power System Modelling, Control and Stability Analysis”, editor F. Milano, IET, London, September 2016.
- ◇ **F. Milano**, *Control and Stability of Future Transmission Networks*, in “The Handbook of Clean Energy Systems – Vol. 4”, Prof. Jinyue Yan editor in chief, John Wiley & Sons, June 2015. ISBN: 978-1-118-38858-7

### JOURNAL PAPERS

- ◇ F. Bizzarri, A. Brambilla, **F. Milano**, *Simplified Model to Study the Induction Generator Effect of the Sub-Synchronous Resonance Phenomenon*, IEEE Transactions on Energy Conversion, accepted on January 2018, in press.
- ◇ J. Zhao, L. Mili, **F. Milano**, *Robust Frequency Divider for Power System Online Monitoring and Control*, IEEE Transactions on Power Systems, accepted on December 2017, in press.
- ◇ F. Bizzarri, A. Brambilla, **F. Milano**, *Analytic and Numerical Study of TCSC Devices: Unveiling the Crucial Role of Phase-Locked Loops*, IEEE Transactions on Circuit and Systems I: Regular Papers, accepted on October 2017, in press.
- ◇ Y. Wan, **F. Milano**, *Nonlinear Adaptive Excitation Control for Structure Preserving Power Systems*, IEEE Transactions on Power Systems, accepted in September 2017, in press.
- ◇ **F. Milano**, *Rotor Speed-free Estimation of the Frequency of the Center of Inertia*, IEEE Transactions on Power Systems, Vol. 33, No. 1, pp. 1153-1155, January 2018.

- ◇ P. Cuffe, **F. Milano**, *Validating Two Novel Equivalent Impedance Estimators*, IEEE Transactions on Power Systems, Vol. 33, No. 1, pp. 1151-1152, January 2018.
- ◇ Á. Ortega, **F. Milano**, *Stochastic Transient Stability Analysis of Transmission Systems with Inclusion of Energy Storage Devices*, IEEE Transactions on Power Systems, Vol. 33, No. 1, pp. 1077-1079, January 2018.
- ◇ P. Mc Namara, **F. Milano**, *Model Predictive Control based AGC for Multi-terminal HVDC-connected AC Grids*, IEEE Transactions on Power Systems, Vol. 33, No. 1, pp. 1036-1048, January 2018.
- ◇ **F. Milano**, I. Dassios, *Primal and Dual Generalized Eigenvalue Problems for Power Systems Small-Signal Stability Analysis*, IEEE Transactions on Power Systems, Vol. 32, No. 6, pp. 4626-4635, November 2017.
- ◇ **F. Milano**, *A General Expression to Determine the Rotor Field Current of Synchronous Machines*, IEEE Transactions on Energy Conversion, Vol. 32, No. 3, pp. 1099-1101, September 2017.
- ◇ P. Ferraro, E. Crisostomi, M. Raugi, **F. Milano**, *Analysis of the Impact of Microgrid Penetration on Power System Dynamics*, IEEE Transactions on Power Systems, Vol. 32, No. 5, pp. 4101-4109, September 2017.
- ◇ M. Marin, **F. Milano**, D. Defour, *Midpoint-Radius Interval-based Method to Deal with Uncertainty in Power Flow Analysis*, Electric Power Systems Research, Vol. 147, pp. 81-87, June 2017.
- ◇ Á. Ortega, **F. Milano**, *Modeling, Simulation and Comparison of Control Techniques for Energy Storage Systems*, IEEE Transactions on Power Systems, Vol. 32, No. 3, pp. 2445-2454, May 2017.
- ◇ **F. Milano**, Á. Ortega, *Frequency Divider*, IEEE Transactions on Power Systems, Vol. 32, No. 2, pp. 1493-1501, March 2017.
- ◇ M. Marin, D. Defour, **F. Milano**, *An Efficient Representation Format for Fuzzy Intervals based on Symmetric Membership Functions*, ACM Transactions on Mathematical Software, Vol. 43, No. 3, Article No. 23, December 2016.
- ◇ **F. Milano**, *Semi-implicit Formulation of Differential-Algebraic Equations for Transient Stability Analysis*, IEEE Transactions on Power Systems, Vol. 31, No. 6, pp. 4534-4543, November 2016.
- ◇ M. J. Hossain, M. A. Mahmud, **F. Milano**, S. Bacha, A. Hably, *Design of Robust Distributed Control for Interconnected Microgrids*, IEEE Transactions on Smart Grid, Vol. 7, No. 6, pp. 2724-2735, November 2016.
- ◇ F. Pallonetto, S. Oxidis, **F. Milano**, D. Finn, *The Effect of Time-of-use Tariffs on the Demand Response Flexibility of an All-electric Smart-grid-ready Dwelling*, Energy & Buildings, Vol. 128, pp. 56-67, September 2016.
- ◇ Á. Ortega, **F. Milano**, *Generalized Model of VSC-based Energy Storage Systems for Transient Stability Analysis*, IEEE Transactions on Power Systems, Vol. 31, No. 5, pp. 3369-3380, September 2016.
- ◇ R. Zárate Miñano, **F. Milano**, *Construction of SDE-based Wind Speed Models with Exponentially Decaying Autocorrelation*, Renewable Energy, Vol. 94, pp. 186-196, August 2016.
- ◇ **F. Milano**, I. Dassios, *Small-Signal Stability Analysis for Non-Index 1 Hessenberg Form Systems of Delay Differential-Algebraic Equations*, IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 63, No. 9, pp. 1521-1530, July 2016.
- ◇ **F. Milano**, *On the Modelling of Zero Impedance Branches for Power Flow Analysis*, IEEE Transactions on Power Systems, Vol. 31, No. 4, pp. 3334-3335, July 2016.

- ◇ **F. Milano**, *Small-Signal Stability Analysis of Large Power Systems with Inclusion of Multiple Delays*, IEEE Transactions on Power Systems, Vol. 31, No. 4, pp. 3257-3266, July 2016.
- ◇ **F. Milano**, *On Current and Power Injection Models for Angle and Voltage Stability Analysis of Power Systems*, IEEE Transactions on Power Systems, Vol. 31, No. 3, pp. 2503-2504, May 2016.
- ◇ **F. Milano**, *Analogy and Convergence of Levenberg's and Lyapunov-based Methods for Power Flow Analysis*, IEEE Transactions on Power Systems, Vol. 31, No. 2, pp. 1663-1664, March 2016.
- ◇ F. Bizzarri, A. Brambilla, **F. Milano**, *The Probe-Insertion Technique for the Detection of Limit Cycles in Power Systems*, IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 63, No. 2, pp. 312-321, February 2016.
- ◇ **F. Milano**, O. Hersent, *Optimal Load Management with inclusion of Electric Vehicles and Distributed Energy Resources*, IEEE Transactions on Smart Grid, Vol. 5, No. 2, pp. 662-672, March 2014.
- ◇ **F. Milano**, R. Zárate Miñano, *A Systematic Method to Model Power Systems as Stochastic Differential Algebraic Equations*, IEEE Transactions on Power Systems, Vol. 28, No. 4, pp. 4537-4544, November 2013.
- ◇ M. Anghel, **F. Milano**, A. Papachristodoulou, *Algorithmic Construction of Lyapunov Functions for Power System Stability Analysis*, IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 60, No. 9, pp. 2533-2546, September 2013.
- ◇ R. Zárate Miñano, M. Anghel, **F. Milano**, *Continuous Wind Speed Models based on Stochastic Differential Equations*, Applied Energy, Vol. 104, pp. 42-49, April 2013.
- ◇ L. Vanfretti, **F. Milano**, *Facilitating Constructive Alignment in Power Systems Engineering Education using Free and Open Source Software*, IEEE Transactions on Education, Vol. 55, No. 3, pp. 309-318, August 2012.
- ◇ **F. Milano**, M. Anghel, *Impact of Time Delays on Power System Stability*, IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 59, No. 4, pp. 889-900, April 2012.
- ◇ **F. Milano**, *Extraneous Instabilities Arising in Power Systems with Non-Synchronous Distributed Energy Resources*, International Journal of Electrical Power and Energy Systems, Vol. 34, No. 1, pp. 174-176, January 2012.
- ◇ **F. Milano**, *Hybrid Control Model of Under Load Tap Changers*, IEEE Transactions on Power Delivery, Vol. 26, No. 4, pp. 2837-2844, October 2011.
- ◇ R. Zárate Miñano, **F. Milano**, A. Conejo, *An OPF Methodology to Ensure Small-Signal Stability*, IEEE Transactions on Power Systems, Vol. 26, No. 3, pp. 1050-1061, August 2011.
- ◇ H. M. Ayres, I. Kopicak, M. S. Castro, **F. Milano**, V. F. da Costa, *A Didactic Procedure for Designing Power Oscillation Dampers of FACTS Devices*, Simulation Modelling Practice and Theory, Vol. 18, No. 6, pp. 896-909, June 2010.
- ◇ A. M. A. Haidar, A. Mohamed, **F. Milano**, *A Computational Intelligence-based Suite for Vulnerability Assessment of Electrical Power Systems*, Simulation Modelling Practice and Theory, Vol. 18, No. 5, pp. 533-546, May 2010.
- ◇ R. Zárate-Miñano, T. Van Cutsem, **F. Milano**, A. J. Conejo, *Securing Transient Stability using Time-Domain Simulations within an Optimal Power Flow*, IEEE Transactions on Power Systems, Vol. 25, No. 1, pp. 243-253, February 2010.
- ◇ L. Vanfretti, **F. Milano**, *The Experience of PSAT as a Free and Open Source Software for Power System Education and Research*, International Journal of Electrical Engineering Education, Vol. 47, No. 1, pp. 47-62, January 2010.
- ◇ **F. Milano**, *Three-Dimensional Visualization and Animation for Power Systems Analysis*, Electric Power System Research, Vol. 79, No. 12, pp. 1638-1647, December 2009.



- ◇ **F. Milano**, K. Srivastava, *Dynamic REI Equivalents for Short Circuit and Transient Stability Analysis*, Electric Power System Research, Vol. 79, No. 6, pp. 878-887, June 2009.
- ◇ **F. Milano**, *Continuous Newton's Method for Power Flow Analysis*, IEEE Transactions on Power Systems, Vol. 24, No. 1, pp. 50-57, February 2009.
- ◇ R. J. Avalos, C. A. Cañizares, **F. Milano**, A. J. Conejo, *Equivalency of Continuation and Optimization Methods to Determine Saddle-node and Limit-induced Bifurcations in Power Systems*, IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 56, No. 1, pp. 210-223, January 2009.
- ◇ R. Zárate Miñano, A. Conejo, **F. Milano**, *OPF-Based Security Redispatching Including FACTS Devices*, IET Generation, Transmission & Distribution, Vol. 2, No. 6, pp. 821-833, June 2008.
- ◇ W. Gu, **F. Milano**, P. Jiang, J. Zheng, *Improving Large-disturbance Stability through Optimal Bifurcation Control and Time Domain Simulations*, Electric Power System Research, Vol. 78, No. 3, pp. 337-345, March 2008.
- ◇ **F. Milano**, L. Vanfretti, J. C. Morataya, *An Open Source Virtual Laboratory: The PSAT case and Experience*, IEEE Trans. on Education, Vol. 51, No. 1, pp. 17-23, February 2008.
- ◇ R. Mínguez, **F. Milano**, R. Zárate Miñano, A. Conejo, *Optimal Network Placement of SVC Devices*, IEEE Trans. on Power Systems, Vol. 22, No. 4, pp. 1851-1860, November 2007.
- ◇ **F. Milano**, A. J. Conejo, J. L. García Dornelas, *Reactive Power Adequacy in Distribution Networks with Embedded Distributed Energy Resources*, ASCE Journal of Energy Engineering, Vol. 133, pp. 132-143, September 2007.
- ◇ **F. Milano**, A. J. Conejo, R. Zárate Miñano, *General Sensitivity Formulas for Maximum Loading Conditions in Power Systems*, IET Generation, Transmission & Distribution, Vol. 1, No. 3, pp. 516-526, May 2007.
- ◇ W. Gu, **F. Milano**, P. Jang, G. Tang, *Hopf Bifurcations Induced by SVC Controllers: A Didactic Example*, Electric Power Systems Research, Vol. 77, No. 3-4, pp. 234-240, March 2007.
- ◇ A. J. Conejo, J. M. Arroyo, **F. Milano**, J. A. Mora, *Electric Machine Undergraduate Lab. A traditional Approach with a New Technical Base*, International Journal of Electrical Engineering Education, Vol. 44, No. 1, pp. 12-22, January 2007.
- ◇ A. J. Conejo, **F. Milano**, R. García-Bertrand, *Congestion Management Avoiding Off-line Non-thermal Transmission Capacity Limits*, IEEE Trans. on Power Systems, Vol. 21, No. 1, pp. 357-364, February 2006.
- ◇ **F. Milano**, C. A. Cañizares, A. J. Conejo, *Sensitivity-based Security-constrained OPF Market Clearing Model*, IEEE Trans. on Power Systems, Vol. 20, No. 4, pp. 2051-2060, November 2005.
- ◇ A. J. Conejo, E. Castillo, R. Mínguez, **F. Milano**, *Locational Marginal Price Sensitivities*, IEEE Trans. on Power Systems, Vol. 20, No. 4, pp. 2026-2033, November 2005.
- ◇ **F. Milano** *An Open Source Power System Analysis Toolbox*, IEEE Trans. on Power Systems, Vol. 20, No. 3, pp. 1199-1206, August 2005.
- ◇ **F. Milano**, C. A. Cañizares, M. Invernizzi, *Voltage Stability Constrained OPF Market Models Considering N-1 Contingency Criteria*, Electric Power Systems Research, Vol. 74, No. 1, pp. 27-36, March 2005.
- ◇ C. A. Cañizares, N. Mithulanthan, **F. Milano**, J. Reeve, *Linear Performance Indices to Predict Oscillatory Instability Problems in Power Systems*, IEEE Trans. on Power Systems, Vol. 19, No. 2, pp. 1104-1114, May 2004.
- ◇ **F. Milano**, C. A. Cañizares, M. Invernizzi, *Multi-Objective Optimization for Pricing System Security in Electricity Markets*, IEEE Trans. on Power Systems, Vol. 18, No. 2, pp. 596-604, May 2003.

- ELECTRONIC JOURNALS ◇ **F. Milano**, *Irish Transmission System: Balancing Simulation and Applied Maths in Power System Analysis*, Engineers Journal, Engineers Ireland, October 18, 2016.
- ◇ C. A. Cañizares, H. Chen, **F. Milano**, A. Singh, *Transmission Congestion Management and Pricing in Simple Auction Electricity Markets*, International Journal of Emerging Electric Power Systems, Vol. 1, No. 1, pp. 1-28, 2004.
- CONFERENCE PAPERS ◇ M. Liu, I. Dassios, **F. Milano**, *Small-Signal Stability Analysis of Neutral Delay Differential Equations*, 43th Annual Conference of the IEEE Industrial Electronics Society (IECON 2017), Beijing, China, 29 October-1 November, 2017.
- ◇ P. Ferraro, E. Crisostomi, M. Raugi, **F. Milano**, *Decentralized Stochastic Control of Microgrids to Improve System Frequency Stability*, IEEE PES ISGT Europe 2017, Turin, Italy, 26-29 September 2017.
- ◇ Á. Ortega, **F. Milano**, *Impact of Frequency Estimation for VSC-based Devices with Primary Frequency Control*, IEEE PES ISGT Europe 2017, Turin, Italy, 26-29 September 2017.
- ◇ P. Ferraro, E. Crisostomi, M. Raugi, **F. Milano**, *On the Impact of Microgrid Energy Management Systems on Power System Dynamics*, IEEE PES General Meeting, Chicago, IL, 16-20 July 2017.
- ◇ J. Cerqueira, F. Bruzzone, C. Castro, S. Massucco, **F. Milano**, *Comparison of the Dynamic Response of Wind Turbine Primary Frequency Controllers Constraints*, IEEE PES General Meeting, Chicago, IL, 16-20 July 2017.
- ◇ P. Mc Namara, **F. Milano**, *MPC based AGC for AC/DC Grids with Delays and Voltage Constraints*, IEEE PES General Meeting, Chicago, IL, 16-20 July 2017.
- ◇ **F. Milano**, *Methodological and Didactic Challenges of Teaching Electrical Energy Systems to Second Year Students*, EDULEARN 2017, Barcelona, Spain, 3-5 July 2017.
- ◇ **F. Milano**, *Experience Teaching Electrical Energy Systems to Non-electrical Engineering Students*, EDULEARN 2017, Barcelona, Spain, 3-5 July 2017.
- ◇ M. Marin, D. Defour, **F. Milano**, *Asynchronous Power Flow on Graphic Processing Units*, 25th Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP 2017), St. Petersburg, Russia, March 6-8, 2017.
- ◇ R. Campaner, M. Chiandone, G. Sulligoi, **F. Milano**, *Automatic Voltage and Reactive Power Control in Distribution Systems: Dynamic Coupling Analysis*, ICRERA, Birmingham, UK, November 23-28, 2016.
- ◇ Á. Ortega, **F. Milano**, *Comparison of Bus Frequency Estimators for Power System Transient Stability Analysis*, POWERCON, Wollongong, Australia, September 28 - October 1, 2016.
- ◇ M. Liu, Á. Ortega, A. Melhorn, D. Flynn, **F. Milano**, *Stability-constrained Unit Commitment with Water Network Loads*, POWERCON, Wollongong, Australia, September 28 - October 1, 2016.
- ◇ R. Zárate-Miñano, F. M. Mele, **F. Milano**, *SDE-based Wind Speed Models with Weibull Distribution and Exponential Autocorrelation*, IEEE PES General Meeting, Boston, MA, 17-21 July 2016. This paper was included in the session *Best Conference Papers on Power System Modeling and Analysis*.
- ◇ Á. Ortega, P. Mc Namara, **F. Milano**, *Design of MPC-based Controller for a Generalized Energy Storage System Model*, IEEE PES General Meeting, Boston, MA, 17-21 July 2016.
- ◇ **F. Milano**, R. Zárate-Miñano, *On the Stochastic Nature of Deterministic Power System Models for Dynamic Analysis*, IEEE PES General Meeting, Boston, MA, 17-21 July 2016.
- ◇ P. Mc Namara, Á. Ortega, **F. Milano**, *Model Predictive Control based AGC for Multi-Terminal DC Grids*, IEEE PES General Meeting, Boston, MA, 17-21 July 2016.

- ◇ **F. Milano**, *Delay-based Numerical Stability of the Partitioned-Solution Approach*, IEEE PES General Meeting, Boston, MA, 17-21 July 2016. This paper was included in the session *Best Conference Papers on Power System Modeling and Analysis*.
- ◇ **F. Milano**, *Thinking Nonlinearly: Experience in Teaching Power System Stability Analysis in Engineering Programmes*, EDULEARN 2016, Barcelona, Spain, 4-6 July 2016.
- ◇ **F. Milano**, *Problem Solving through Limit-case Analysis: Experience in Electrical Engineering Programmes*, EDULEARN 2016, Barcelona, Spain, 4-6 July 2016.
- ◇ Á. Ortega, **F. Milano**, *Comparison of Different Control Strategies for Energy Storage Devices*, 19th Power System Computation Conference (PSCC), Genoa, Italy, 20-24 June 2016.
- ◇ F. M. Mele, Á. Ortega, R. Zárate-Miñano, **F. Milano**, *Impact of Variability, Uncertainty and Frequency Regulation on Power System Frequency Distribution*, 19th Power System Computation Conference (PSCC), Genoa, Italy, 20-24 June 2016.
- ◇ C. Roberts, E. M. Stewart, **F. Milano**, *Validation of the Ornstein-Uhlenbeck Process for Load Modeling Based on  $\mu$ PMU Measurements*, 19th Power System Computation Conference (PSCC), Genoa, Italy, 20-24 June 2016.
- ◇ F. Bizzarri, A. Brambilla, S. Grillo, **F. Milano**, *Periodic Small-Signal Analysis as a Tool to Build Transient Stability Models of VSC-based Devices*, 19th Power System Computation Conference (PSCC), Genoa, Italy, 20-24 June 2016.
- ◇ L. Hakim, M. Wahidi, U. Murdika, **F. Milano**, J. Kubokawa, N. Yorino, *A Three-phase Power Flow Analysis for Electrical Power Distribution System with Low Voltage Profile*, The 2nd International Conference on Information Technology, Computer and Electrical Engineering (ICITACEE 2015), Semarang, Indonesia, 16-18 October 2015.
- ◇ Á. Ortega, **F. Milano**, *Design of a Control Limiter to Improve the Dynamic Response of Energy Storage Systems*, IEEE PES General Meeting, Denver, CO, 26-30 July 2015.
- ◇ **F. Milano**, L. Vanfretti *Role of Non-commercial Software in Undergraduate Electric Energy Systems Programmes*, EDULEARN 2015, Barcelona, Spain, 6-8 July 2015.
- ◇ M. Chiandone, R. Campaner, V. Arcidiacono, G. Sulligoi, **F. Milano**, *Automatic Voltage and Reactive Power Regulator for Wind Farms participating to TSO Voltage Regulation*, PowerTech, Eindhoven, Netherlands, 29 June-2 July 2015.
- ◇ M. Chiandone, R. Campaner, A. Massi Pavan, V. Arcidiacono, G. Sulligoi, **F. Milano**, *Coordinated Voltage Control of Multi-Converter PV plants operating in Transmission Systems*, 5th International Conference on Clean Electrical Power, Taormina, Italy, 16-18 June 2015.
- ◇ P. McNamara, S. McLoone, **F. Milano**, *Automatic Voltage Control of a Cluster of Hydro Power Plants to Operate as a Virtual Power Plant*, 2015 IEEE 15th International Conference on Environmental and Electrical Engineering, Rome, Italy, 10-13 June 2015.
- ◇ R. Campaner, M. Chiandone, V. Arcidiacono, G. Sulligoi, **F. Milano**, *Feasibility Assessment of Plug and Play Model Predictive Control for use in DC Grids*, 2015 IEEE 15th International Conference on Environmental and Electrical Engineering, Rome, Italy, 10-13 June 2015.
- ◇ **F. Milano**, R. Zárate-Miñano, F. M. Mele, *Characterization of Wind Power Fluctuations from Frequency Measurement data*, 13th Wind Integration Workshop, Berlin, Germany, 11-13 November 2014.
- ◇ M. Chiandone, G. Sulligoi, **F. Milano**, G. Piccoli, P. Maniá, *Back-To-Back MVDC link for Distribution Systems Active Connection: a Network Study*, ICRERA 2014, Milwaukee, Wisconsin, 19-22 October 2014.
- ◇ L. Hakim, M. Wahidi, T. Handoko, H. Gusmedi, N. Soedjarwanto, **F. Milano**, *Development of a Power Flow Software for Distribution System Analysis Based on Rectangular Voltage Using Python Software Package*, ICITEE 2014, Yogyakarta, Indonesia, 7-8 October 2014.

- ◇ N. Nikolaev, K. Gerasimov, **F. Milano**, *Two-stage Approach for the Initialization of Doubly-fed Induction Generator Models*, International Scientific Symposium Electrical Power Engineering 2014, Varna, Bulgaria, 11-13 September 2014.
- ◇ F. Milano, *Experience of Unix Terminal-based Labs for Undergraduate Modules on Power System Analysis*, EDULEARN 2014, Barcelona, Spain, 7-9 July 2014.
- ◇ V. Bokharaie, R. Sipahi, **F. Milano**, *Small-Signal Stability Analysis of Delayed Power System Stabilizers*, 18th Power System Computation Conference (PSCC), Wroclaw, Poland, 18-22 August 2014.
- ◇ M. Marin, D. Defour, **F. Milano**, *Power Flow Analysis under Uncertainty using Symmetric Fuzzy Arithmetic*, IEEE PES General Meeting, Washington, DC, 26-31 July 2014. This paper was included in the session *Best Conference Papers on Power System Analysis and Modeling*.
- ◇ R. Campaner, M. Chiandone, P. Manià, **F. Milano**, G. Sulligoi, *Application of New Voltage Control Rules in Distribution Networks*, International Conference on Renewable Energy Reserach and Applications (ICRERA2013), Madrid, Spain, 20-23 October 2013.
- ◇ **F. Milano**, R. Zárate-Miñano, *Study of the Interaction between Wind Power Plants and SMES Systems*, 12th Wind Integration Workshop, London, UK, 22-24 October 2013.
- ◇ **F. Milano**, *A Python-based Software Tool for Power System Analysis*, IEEE PES General Meeting, Vancouver, Canada, 21-25 July 2013.
- ◇ R. Campaner and M. Chiandone and **F. Milano** and G. Sulligoi, *New Rules to Employ Distributed Generators in Voltage Control: Assessment and Numerical Validation using DOME*, International Conference on Clean Electrical Power, Alghero, Italy, 11-13 June 2013.
- ◇ C. Sturk, L. Vanfretti, **F. Milano**, H. Sandberg, *Structured Model Reduction of Power Systems*, 2012 American Control Conference, Montreal, Canada, 27-29 June 2012.
- ◇ F. Torelli, **F. Milano**, A. de Bonis, *A General Power System Control Technique based on Lyapunov's Function*, The 13th IEEE International Workshop on Signal Processing Advances in Wireless Communications, SPAWC 2012, Çeşme, Turkey, 17-20 June 2012.
- ◇ **F. Milano**, *A Systematic Method for Failure Diagnosis in Electrical Machine Lab Activities*, ICERI 2011, Madrid, Spain, 14-16 November 2011.
- ◇ **F. Milano**, R. Zárate-Miñano, *Using Python for the Development of Electrical Engineering Projects*, ICERI 2011, Madrid, Spain, 14-16 November 2011.
- ◇ L. Vanfretti, **F. Milano**, *Facilitating Constructive Alignment in Power Systems Engineering Education using Free and Open Source Software*, IEEE PES General Meeting, Detroit, USA, 24-28 July 2011.
- ◇ **F. Milano**, *Step-by-Step Method to Improve Proficiency in Electrical Machine Lab Activities*, EDULEARN 2011, Barcelona, Spain, 5-7 July 2011.
- ◇ **F. Milano**, L. Vanfretti, *State of the Art and Future of OSS for Power Systems*, IEEE PES General Meeting, Calgary, Canada, 26-30 July 2009.
- ◇ **F. Milano**, M. Zhou, G. Hou, *Open Model For Exchanging Power System Data*, IEEE PES General Meeting, Calgary, Canada, 26-30 July 2009.
- ◇ M. Stifter, **F. Milano**, *An Example of Integrating Open Source Modelling Frameworks: The Integration of GIS in PSAT*, IEEE PES General Meeting, Calgary, Canada, 26-30 July 2009.
- ◇ **F. Milano**, , *Assessing Adequate Voltage Stability Analysis Tools for Networks with High Wind Power Penetration*, DRPT 2008, Nanjing, China, 6-9 April 2008.
- ◇ T. Demiray, **F. Milano**, G. Andersson, *Dynamic Phasor Modeling of the Doubly-fed Induction Generator under Unbalanced Conditions*, PowerTech, Lausanne, Switzerland, 1-5 July 2007.

- ◇ L. Vanfretti, **F. Milano**, *Application of the PSAT, an Open Source Software, for Educational and Research Purposes*, PES General Meeting, Tampa, USA, 24-28 June 2007.
- ◇ **F. Milano**, *A Graphical and Open Source Matlab-GAMS Interface for Electricity Market Models*, 9CHLIE, Marbella, Spain, 30 June - 2 July 2005.
- ◇ G. B. Denegri, M. Invernizzi, and **F. Milano**, *A Security Oriented Approach to PMU positioning for Advanced Monitoring of Transmission Grid*, POWERCON 2002, Kunming, China, October 2002.
- ◇ G. B. Denegri, M. Invernizzi, and **F. Milano**, *Synthesis of an equivalent dynamic model for load areas with LTC transformers*, IEEE Transmission & Distribution Conference, Atlanta, USA, October 2001.
- ◇ B. Delfino, G. B. Denegri, M. Invernizzi, and **F. Milano**, *Dynamic Index Assessment for Voltage Stability in Electric Power Systems*, POWERCON 2000, Perth, Australia, December 2000.

THESES

- ◇ **F. Milano**, *Pricing System Security in Electricity Market Models with Inclusion of Voltage Stability Constraints*, Ph.D. Thesis, University of Genoa, Italy, June 2003.
- ◇ **F. Milano**, *La Stabilità di Tensione dei Sistemi Elettrici: Metodologie di Valutazione e Correlazioni tra Procedure Statiche e Dinamiche* (in Italian), Master Thesis, University of Genoa, Italy, March 1999.

REPORTS

- ◇ Task Force on Test Systems for Voltage Stability Analysis and Security Assessment, (Chair: T. Van Cutsem; Secretary: Mevludin Glavic; Contributor: **F. Milano**), *Test Systems for Voltage Stability Analysis and Security Assessment*, Technical Report, PES-TR19, Power System Stability Subcommittee, Power System Dynamic Performance Committee, IEEE Power & Energy Society, August 2015.
- ◇ Task Force on Impact of Industry Restructuring on System Dynamic Performance (Chair: C. A. Cañizares; Secretary: **F. Milano**), *Impact of Industry Restructuring on System Dynamic Performance*, Technical Paper Compendium, PES-TPC1, Power System Stability Subcommittee, Power System Dynamic Performance Committee, IEEE Power & Energy Society, February 2014.