Sonja Wogrin

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EDUCATION

- **Universidad Pontificia Comillas** — Madrid, Spain
  PhD, Electric Power Systems — *May 2009 - Jun. 2013*
  - Area of decision support systems in the energy sector
  - Thesis Topic: Generation Expansion Planning in Electricity Markets with Bilevel Mathematical Programming Techniques
- **Massachusetts Institute of Technology** — Cambridge, MA
  Master of Science in Computation for Design and Optimization — *Feb. 2007 - Jun. 2008*
  - Emphasis on optimization, mathematical simulation and numerical methods
  - Thesis Topic: Bayesian techniques for inverse problems in computational fluid dynamics, optimal sensor placement, model reduction
  - GPA: 5.0/5.0
- **The University of Sheffield** — Sheffield, UK
  Erasmus Program — *Sep. 2006 - Jan. 2007*
  - GPA: Class 1 honors (A)
- **Graz University of Technology** — Graz, Austria
  Technical Mathematics - (5-year degree) — *Sep. 2003 - Oct. 2008*
  - Emphasis on operations research, statistics, mathematics in finance and insurance
  - GPA: 1.17 (using a 1 (best) to 5 (worst) scale)

PUBLICATIONS

- S. Wogrin, B. F. Hobbs, D. Ralph, E. Centeno and J. Barquín. Open versus closed loop capacity equilibria in electricity markets under perfect and oligopolistic competition. Mathematical Programming Series B. Vol. 140, No. 2, 2013.
- S. Wogrin, E. Centeno and J. Barquín. Generation Capacity Expansion Analysis: Open Loop Approximation of Closed Loop Equilibria. IEEE Transactions on Power Systems. Vol. 28, No. 3, 2013.
- S. Wogrin, J. Barquín and E. Centeno. Capacity Expansion Equilibria in Liberalized Electricity Markets: An EPEC Approach. IEEE Transactions on Power Systems. Vol. 28, No. 2, 2013.
- S. Wogrin, E. Centeno and J. Barquín. Generation Capacity Expansion in Liberalized Electricity Markets: A Stochastic MPEC Approach. IEEE Transactions on Power Systems. Vol. 26, No. 4, November 2011.

- E. Centeno, S. Wogrin, Á. López-Peña and M. Vázquez. Analysis of Investments in Generation Capacity: A Bilevel Approach. IET Generation, Transmission & Distribution, Vol. 5, No. 8, pp. 842-849, August 2011.
- S. Wogrin, K. Willcox and O. Ghattas. A Real-Time Measurement-Inversion-Prediction-Steering Framework for Hazardous Events. Springer, Dynamic Data Driven Applications Systems. Submitted. May 2009.
- S. Wogrin. Model Reduction for Dynamic Sensor Steering: A Bayesian Approach to Inverse Problems. Master Thesis, Massachusetts Institute of Technology, June 2008.

WORK EXPERIENCE

- **Institute for Research in Technology, Universidad Pontificia Comillas** Madrid, Spain
  Assistant Professor *Sep. 2013 -*
  - Project "Capacity studies under a new generation and demand structure framework", developed for ENDESA
  - Project "Wind energy intermittency: from wind farm turbulence to economic management" in collaboration with Johns Hopkins University
- **Institute for Research in Technology, Universidad Pontificia Comillas** Madrid, Spain
  Assistant Researcher *May. 2009 - Aug. 2013*
  - Project "Long-term studies in the energy sector", developed for ENDESA
  - Model of the energy sector and other industries (cement, steel and refinery sector) to estimate carbon prices via an equilibrium model (MerCO2) for ENDESA
  - Project "Studies for generation planning with non-dispatchable generation", developed for ENDESA
  - Analyze and improve algorithms and study methods used by ENDESA in order to elaborate the yearly expansion plan
  - Maintenance of the developed tool Expande
  - Study the effect of non-dispatchable energy using a convolution-based method
- **MIT Aerospace Computational Design Laboratory** Cambridge, MA
  Research Assistant for the Department of Aeronautics and Astronautics *Feb. 2007 - Jun. 2008*
  - Research Assistant for Prof. Karen E. Willcox (emphasis on model order reduction, numerical methods and optimization)
  - Developed numerical algorithm for determining location of contaminant source based on sensor measurements
  - Optimized sensor placements for accurate reconstruction of flow field
  - Presented research results at MIT seminars

TEACHING EXPERIENCE

- **Universidad Pontificia Comillas, Dept. of Industrial Organization** Madrid, Spain
  Assistant Professor *Sep. 2013 -*
  - Course: Mathematical Methods (4th year course for Industrial Engineers)
  - Course: Operations Management

  - Course: Operations Research
  - Course: Written Communication

- **Universidad Pontificia Comillas, Dept. of Industrial Organization** Madrid, Spain
  Teaching Assistant *Sep. 2011 - Feb. 2013*
  - Teaching Assistant for the class: Mathematical Methods (4th year course for Industrial Engineers)
  - Responsible for the practical exercises
  - Supervised and graded final exams

- **Graz University of Technology, Dept. of Mathematics** Graz, Austria
  Teaching Assistant *Oct. 2005 - Jun. 2006*
  - Teaching Assistant for the class: Mathematics I & II for Engineers
  - Provided individual assistance to students in weekly tutorials
  - Lead assistant for recitations
  - Supervised and graded final exams

CONFERENCE PRESENTATIONS

- S. Wogrin, P. Dueñas, J. Reneses and A. Delgadillo. Modeling Power Systems with a High Penetration of Renewables. 2013 INFORMS Annual Meeting, Minneapolis, Minnesota, October 6-9, 2013.
- S. Kasina, S. Wogrin, and B. Hobbs. Tests of Approximations to Unit Commitment in Planning Models. 2013 INFORMS Annual Meeting, Minneapolis, Minnesota, October 6-9, 2013.
- S. Wogrin, and E. Centeno. Approximation of Bilevel Generation Capacity Investment Equilibria. 2013 INFORMS Annual Meeting, Minneapolis, Minnesota, October 6-9, 2013.
- S. Wogrin, and E. Centeno. Approximating Closed Loop Equilibria via Open Loop Equilibrium Models: An Application to Generation Expansion Planning in Liberalized Electricity Markets. Tenth International Conference on Computational Management Science, Montréal, Canada, May 1-3, 2013.
- S. Wogrin, J. Barquín and E. Centeno. Impact of Renewable Energy Sources on Generation Capacity Investments: A Stochastic MPEC Approach. 2012 INFORMS Annual Meeting, Phoenix, Arizona, October 14-17, 2012.
- E. Centeno, S. Wogrin and J. Barquín. Study of strategic behavior impact in the spot market on capacity expansion using a linearised EPEC. 2012 INFORMS Annual Meeting, Phoenix, Arizona, October 14-17, 2012.
- S. Wogrin, B. F. Hobbs, D. Ralph, E. Centeno and J. Barquín. Market Power and Investment Decisions in Electricity Markets: Open vs Closed Loop Equilibria. 2011 INFORMS Annual Meeting, Charlotte, North Carolina, November 13-16, 2011.
- S. Wogrin, J. Barquín and E. Centeno. How Capacity Payments influence Investment Decisions in Electricity Markets. 12th Centre for Competition and Regulatory Policy Workshop, Paris, France, July 7-8, 2011.
- E. Centeno, J. Reneses, S. Wogrin and J. Barquín. Representation of electricity generation capacity expansion by means of game theory models. 8th International Conference on the European Energy Market - EEM11, Zagreb, Croatia, May 25-27, 2011.

- S. Wogrin, E. Centeno and J. Barquín. Analysis of Investments in Electricity Plants with Stochastic Bilevel Programming Techniques. 2010 INFORMS Annual Meeting, Austin Texas, November 7-10, 2010.
- S. Wogrin, E. Centeno and J. Barquín. Advantages of Stochastic Bilevel Programming in the Generation Capacity Expansion Problem. 4th Annual Trans-Atlantic Infraday Conference, Washington DC, November 4-5, 2010.
- S. Wogrin, E. Centeno, J. Barquín. Analysis of strategic investments in electricity generation capacity under uncertainty, 8th Young Energy Engineers & Economists Seminar. Cambridge, UK, April 8-9, 2010

ACADEMIC SERVICE

- Referee for *IEEE Transactions on Power Systems*, *IEEE Transactions on Smart Grid*, *IET Generation, Transmission & Distribution*, *Computers & Operations Research*, *Networks and Spatial Economics*, *EURO Journal on Computational Optimization*, and *RAIRO - Operations Research*
- Committee member of the student chapter of the Spanish Association for Energy Economics

RESEARCH STAYS

- Department of Geography and Environmental Engineering, Johns Hopkins University, B. F. Hobbs, October 2011 and March-April 2013, Baltimore, MD, USA.
- Faculty of Economics, Electricity Policy Research Group, University of Cambridge, B. F. Hobbs and D. Ralph, July 2010, Cambridge, UK.

AWARDS

- Nikola Tesla scholarship awarded by the Graz University of Technology, 2007
- Excellence scholarship awarded by the Department of Mathematics and Physics at the Graz University of Technology, 2005
- SPECIAL AWARD in the Museum Online 2003 Competition that focused on the cooperation between museums and schools using innovative technologies, 2003

COMPUTER SKILLS

- Languages: C/C++ (basics), LaTeX, Visual Basic, R
- Applications: Mathematica, MatLab, Maple, GAMS, MS Office XP

LANGUAGES

- German: Native
- English: Fluent. *TOEFL* (109/120)
- Spanish: Fluent. *DELE* (B2)
- French: Intermediate.