SESO 2015 International Thematic Week
"Smart Energy and Stochastic Optimization"
June 22 to 26, 2015

P. Carpentier,* J.-P. Chancelier and M. De Lara†

ENSTA ParisTech and École des Ponts ParisTech

Abstract

Energy companies witness a rapidly changing landscape: increase of intermittent, variable and spatially distributed power sources (wind, sun); expansion of markets and actors at all spatial and temporal scales; penetration of telecom technologies (smart grids). Those new factors impact the practice of optimization. Following SESO 2014, the 2d International Thematic Week *Smart Energy and Stochastic Optimization* (SESO 2015) will take place in Paris from June 22 to 26, 2015. SESO 2015 will be devoted to stochastic optimization, decentralized optimization and their applications to the management of new energy systems. The Week alternates courses, tutorials, scientific workshops and an industry day; it is aimed at a mixed public, in academy and in industry. The academic organizers are ENSTA ParisTech and École des Ponts ParisTech, with the financial support of the Gaspard Monge Program for Optimization and operations research (PGMO).

Link: http://cermics.enpc.fr/~delara/SESO/SESO2015/SESO2015/

Registration: http://www.fondation-hadamard.fr/fr/pgmo/seso2015

*pierre.carpentier@ensta-paristech.fr

†delara@cermics.enpc.fr

Contents

1 Monday 22 June 2015: PGMO/PRMO Project STORY — at ENSTA Paris-Tech

- Title: "PGMO/PRMO project STORY, scientific network on Stochastic and Robust Optimization and Applications"

- Location: ENSTA ParisTech, Palaiseau, France

  How to get there:
  https://www.ensta-paristech.fr/en/getting-ensta-paristech

- Planning:

  - Morning: tutorial
    * 08:30–09:00 - Welcome coffee
    * 09:00–12h00 - tutorial by Laurent El Ghaoui (UC Berkeley)
      "Larger-scale robust optimization and applications"

  - Afternoon: academic talks
    * 14h00–14h45: Mike Ludkowski (UC Santa Barbara, USA)
      "Connecting optimal switching control and sequential design"
    * 14h45–15h30: Michel Gendreau (École Polytechnique de Montréal)
      "Effective solution approaches for stochastic and integer problems"
    * 15h30–16h00: break
    * 16h00–16h30: Cyril Masquelier (EDF R & D)
      "Joint optimization production-demand"
    * 16h30–17h00: Vincent Leclère (École des Ponts ParisTech)
      "Safe elimination of variables: application to the EDF intra-day reoptimization problem"

2   Tuesday 23 June 2015: PGMO/IROE Project LASON2 — at ENSTA Paris-Tech

- Title: "PGMO/IROE project LASON2, Centralized versus Decentralized Energy Management in a Stochastic Setting"

- Location: ENSTA ParisTech, Palaiseau, France

<div align="center">

How to get there:
https://www.ensta-paristech.fr/en/getting-ensta-paristech

</div>

- Planning:

  - Morning: academic talks

    * 08:30–09:00 - Welcome coffee
    * 09:00–09:05 - Introduction by Bernardo K. Pagnoncelli (Adolfo Ibáñez University, Santiago, Chile)
    * 09:05–09:15 - Michel De Lara (École des Ponts ParisTech)
      "Single and multi agent optimization, game theory"
    * 09:15–10:00 - Bernardo Pagnoncelli (Adolfo Ibáñez University, Santiago, Chile)
      "Energy management in a solar microgrid using stochastic programming and data clustering"
    * 10:00–10:30 - Coffee break
    * 10:30–11:15 - Valentin Foucher (student at École Polytechnique)
      "Optimal control and sizing of a combined heat and power generator"
    * 11:15–12:00 - Pierre Carpentier (ENSTA ParisTech)
      "Decentralized energy management: two examples"

  - Afternoon: LASON2 working session

3   Wednesday 24 June 2015: Free Day

4 Thursday 25 June 2015: Industry Day on Softwares for Optimization in Smart Grids — at ENPC ParisTech

- Title: "Softwares for Optimization in Smart Grids"

- Location: amphitheater Caquot I, Bâtiment Coriolis, École des Ponts ParisTech (ENPC), Champs sur Marne, France

    How to get there: http://www.enpc.fr/en/school-practice

- Planning:

    - Morning: : industries present challenges for software development for smart grid management
        * 08:30–09:00 - welcome coffee
        * 9h00–9h15: introductory talk by Michel De Lara (École des Ponts ParisTech)
        * 9h15–9h45: Nadia Maïzi (Mines ParisTech)
            "The Smart grid France association agenda"
        * 9h45–10h15: Mohammad Dib (MeMo, ENGIE)
            "Energy transition: optimizing the management of interruptible resources"
        * 10h15–10h45: break
        * 10h45–11h15: Guillaume Erbs (GDF Suez)
            "Using importance sampling in Stochastic Dual Dynamic Programming: application to the analysis of gas markets"
        * 11h15–11h45: Peio Lahirigoyen (Artelys)
            "Stochastic capacity expansion planning"
        * 11h45–12h15: Pauline Caumon (EDF R& D)
            "Towards more reliability for renewable energy production : dynamic battery management and solar forecast in a decentralized system"
        * 12h15–12h30: Presentation of the *Club LORI (Logiciels pour les réseaux intelligents)* by Michel De Lara (École des Ponts ParisTech)

    - 12h30–14h30: lunch

    - Afternoon: Institute for energy transition Efficacity
        * 14h30–14h45: Michel De Lara (École des Ponts ParisTech)
            "Presentation of the Efficacity Institute for energy transition"
        * 14h45–15h00: Michel De Lara (École des Ponts ParisTech)
            "Optimization at the Efficacity Institute for energy transition"
        * 15h00–15h30: Pierre Picard (GDF SUEZ SA and Efficacity)
            "Optimization of a combined heat and power (CHP) system"
        * 15h30–16h00: Romain Bonabe de Rougé (Efficacity) and Valentin Foucher (student at École Polytechnique)
            "Optimal sizing and integration of a micro-combined heat and power generation with thermal and electrical storage in an individual residential housing"
        * 16h00–16h30: Tristan Rigaut (Efficacity)
            "Energy optimization and climate control of a subway station microgrid"

5   Friday 26 June 2015: Labex Bézout Scientific Workshop — at ENPC Paris-Tech

This academic day is devoted to advances in coordination between statistics and optimization, with the goal of solving stochastic optimization problems.

- Title: "Statistics and Optimization for Smart Grids Management"

- Location: amphitheater Caquot I, Bâtiment Coriolis, École des Ponts ParisTech (ENPC), Champs sur Marne, France

  How to get there: http://www.enpc.fr/en/school-practice

- Planning:

  – Morning: tutorial

    * 08:30–08:55 - welcome coffee
    * 08:55–09:00 - Introduction by Pierre Vandekerkhove (University Paris-Est, France and Georgia Tech, USA) and Michel De Lara (École des Ponts ParisTech)
    * 09:00–12h00 - Johannes Royset (Naval Postgraduate School, Monterey) tutorial on *"Epi-splines for statistics"*

  – Afternoon: academic talks

    * 14h00–14h30: Jean-Christophe Pesquet (Syscom-LIGM, University Paris-Est) *"Stochastic splitting methods for solving large-scale convex optimization problems"*
    * 14h30–15h00: Mathilde Mougeot (Paris 7, LPMA) *"Modelling and forecasting intraday load curves using high dimensional methods"*
    * 15h00–15h30: Pierre Gaillard (EDF R& D) *"'Probabilistic load and price forecasting"*