BIRS-CMO Workshop 19w5091
Multi-Stage Stochastic Optimization for Clean Energy Transition
Smart Energy and Stochastic Optimization
Sep 22 - Sep 27, 2019

Michel De Lara and Onesimo Hernandez-Lerma, Alejandro Jofre, Riadh Zorgati

Abstract

Multistage stochastic optimization stands at the interface between optimization and stochastic processes. The field is growing, especially in response to demand from the energy sector — expected to incorporate a growing share of random renewable energy, while minimizing costs. To ensure reliability, this random supply will require the efficient deployment of energy storage devices in what is becoming a highly distributed environment. The least-cost operation of these devices is a multistage stochastic optimization problem. The workshop Multi-Stage Stochastic Optimization for Clean Energy Transition will gather international experts, both from academy and from industry, to work together on advances in numerical approaches to solve large-scale multistage stochastic optimization problems. Quite naturally, will also be discussed how to develop statistics and to handle risk for such problems. The workshop will also welcome experts and contributions in stochastic equilibria and in game theory with information.

`Link: http://cermics.enpc.fr/~delara/BIRS/BIRS19w5091/`

Contents

1 Sunday 22 September 2019 (afternoon): Check-in

- 14h00–23h59 - Check-in begins (Front desk at your assigned hotel)
- 19h30–22h00 - Dinner (Restaurant Hotel Hacienda Los Laureles)
- 20h30–21h30 - Informal gathering (Hotel Hacienda Los Laureles)

2 Monday 23 September 2019 (morning): Introductory Session on Optimization and Energy

- 07h30–08h45 - Breakfast (Restaurant at your assigned hotel)
- 08h45–09h00 - Introduction and Welcome (Conference Room San Felipe)
- 09h00–09h30 -
  Roundtable
- 09h30–10h00 - Jofre, Alejandro and De Lara, Michel,
  Energy transition panorama and challenges
- 10h00–10h30 - Devkota, Jyoti U.,
  Results from Sample Surveys of Renewable Energy Users of Nepal
- 10h30–11h00 - Coffee Break (Conference Room San Felipe)
- 11h00–11h45 - Philpott, Andy,
  Multistage Stochastic Capacity Planning Using JuDGE
- 11h45–12h30 - Gendreau, Michel,
  A Hybrid Dynamic Programming-Tabu Search Approach for the Long-Term Energy Planning Problem
- 12h30–13h00 - Schultz, Ruediger,
  Capacity Management In Gas Networks: A One-, Two-, Or Multi-Stage Problem?
- 13h20–13h30 - Group Photo (Hotel Hacienda Los Laureles)

3 Monday 23 September 2019 (afternoon): Markets and Equilibria

- 13h30–15h00 - Lunch (Restaurant Hotel Hacienda Los Laureles)
- 15h00–15h30 -
- 15h30–16h00 -
- 16h00–16h30 - Coffee Break (Conference Room San Felipe)
- 16h30–17h15 - Ferris, Michael,
  Computation in Markets with Risk
- 17h15–17h45 - Rujeerapaiboon, Napat,
  A Day-Ahead Decision Rule Method for Multi-Market Multi-Reservoir Management
- 17h45–18h15 - Deride, Julio,
  Computation Techniques for Stochastic Equilibrium Problems
- 18h15–19h00 -
- 19h00–21h00 - Dinner (Restaurant Hotel Hacienda Los Laureles)

4 Tuesday 24 September 2019 (morning): Renewable Energies, Risk and Micro-Grids Management

- 07h30–09h00 - Breakfast (Restaurant at your assigned hotel)
- 09h00–09h45 - Jofre, Alejandro,
  Massive Entry of Nonconventional Renewal Energies, Strategic Behavior and Risk Analysis for Network Electricity Markets
- 09h45–10h30 - Dentcheva, Darinka,
  Statistical Estimation of Composite Risk Functionals
- 10h30–11h00 - Coffee Break (Conference Room San Felipe)
- 11h00–11h45 - Ruszczynski, Andrzej,
  Risk-Averse Optimization and Control of Partially Observable Systems
- 11h45–12h15 - Singh, Bismark,
  Some Approximations, Algorithms and Applications of Chance-Constrained Programming
- 12h15–13h00 - Ludkovski, Michael,
  Stochastic Control with Local Probabilistic Constraints for Microgrid Management
- 13h00–13h30 - Break

5 Tuesday 24 September 2019 (afternoon): Decomposition Methods for Micro-Grids Stochastic Control

- 13h30–15h00 - Lunch (Restaurant Hotel Hacienda Los Laureles)
- 15h00–15h30 -
- 15h30–16h00 -
- 16h00–16h30 - Coffee Break (Conference Room San Felipe)
- 16h30–17h15 - De Lara, Michel,
  Mixing Decomposition-Coordination Methods in Multistage Stochastic Optimization
- 17h15–17h45 - Chancelier, Jean-Philippe,
  Mixing Dynamic Programming and Scenario Decomposition Methods
- 17h45–18h30 - Carpentier, Pierre,
  Mixing Dynamic Programming and Spatial Decomposition Methods
- 18h30–19h00 - Break
- 19h00–21h00 - Dinner (Restaurant Hotel Hacienda Los Laureles)

6 Wednesday 25 September 2019 (morning): Stochastic Programming

- 07h30–09h00 - Breakfast (Restaurant at your assigned hotel)
- 09h00–09h45 - Pitch session
- 09h45–10h30 - Rockafellar, Terry,
  Progressive Hedging in Nonconvex Stochastic Programming
- 10h30–11h00 - Coffee Break (Conference Room San Felipe)
- 11h00–11h45 - Sagastizábal, Claudia,
  Algorithms for Two-Stage Stochastic Optimization Problems
- 11h45–12h30– Homem-de-Mello, Tito,
  Effective Scenarios in Multistage Stochastic Programs
- 12h30–13h00 - Lunch (Restaurant Hotel Hacienda Los Laureles)

7 Wednesday 25 September 2019 (afternoon): Free Afternoon (Oaxaca)

- 13h30–19h00 - Free afternoon (Oaxaca)
- 19h00–21h00 - Dinner (Restaurant Hotel Hacienda Los Laureles)

8 Thursday 26 September 2019 (morning): Stochastic Programming and Stochastic (Dual) Dynamic Programming

- 07h30–09h00 - Breakfast (Restaurant at your assigned hotel)
- 09h00–09h45 - Shapiro, Alexander,
  Computational Approaches to Solving Multistage Stochastic Programs
- 09h45–10h30 - Royset, Johannes,
  Approximations in Stochastic Optimization
- 10h30–11h00 - Coffee Break (Conference Room San Felipe)
- 11h00–11h45 - Georghiou, Angelos,
  Robust Dual Dynamic Programming
- 11h45–12h30 - Leclère, Vincent,
  Upper bounds for Stochastic Dual Dynamic Programming
- 12h30–13h00 - Regan Baucke,
  SDDP-Like Algorithm for Infinite Horizon Multistage Stochastic Programs
- 13h00–13h30 - Break

9 Thursday 26 September 2019 (afternoon): Stochastic Control

- 13h30–15h00 - Lunch (Restaurant Hotel Hacienda Los Laureles)
- 15h00–15h30 -
- 15h30–16h00 -
- 16h00–16h30 - Coffee Break (Conference Room San Felipe)
- 16h30–17h15 - Freitas Paulo da Costa, Bernardo,
  Stochastic Lipschitz Dynamic Programming
- 17h15–17h45 - Mahajan, Aditya,
  Information State (and its Approximations) for Stochastic Control
- 17h45–18h30 - Vega-Amaya, Óscar,
  An Overview of Markov Decision Processes with Average Cost Criterion
- 18h30–19h00 - Break
- 19h00–21h00 - Dinner (Restaurant Hotel Hacienda Los Laureles)

10 Friday 27 September 2019 (morning): Goodbye Session ;-)

- 07h30–09h00 - Breakfast (Restaurant at your assigned hotel)
- 09h00–10h30 - Open discussion
- 10h30–11h00 - Coffee Break (Conference Room San Felipe)
- 11h00–12h00 - Workshop wrap-up
- 12h00–14h00 - Lunch (Restaurant Hotel Hacienda Los Laureles)