DECENTRALIZED GENERATION SCHEDULING IN ENERGY NETWORKS

Date:
Friday, September 8, 2017 - 1:00pm to 2:00pm
Location:
D3 W122

Day-ahead scheduling of electricity generation or unit commitment is an important and challenging operational activity of power system operators. Mixed integer linear programming (MILP) has been firmly established as an effective technology for this problem for moderate scale integrated systems. In this work, we consider decentralized unit commitment in a large-scale network of generation systems. We develop a decomposition-coordination approach by which independent unit commitment MILP models can be integrated to achieve high quality solutions to the network-wide problem. The approach is based on the alternating direction method of multipliers (ADMM) originally developed for decentralized convex optimization. We adapt ADMM to the highly nonconvex unit commitment problem and demonstrate its computational effectiveness. A key component of this work is a strong duality result for the augmented Lagrangian dual problem of an MILP. This talk is based on joint papers with Javad Feizollahi, Mitch Costley, Andy Sun and Santiago Grijalva.

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