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## Optimal Algorithms for Energy Markets

By Peña Landaburu, Yoseba

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Allocation and Scheduling of Demand in Deregulated Energy Markets | The deregulation of the energy industry has created marketplaces in which producers and consumers can operate in order to more effectively. This book develops a new model for electricity retail where customers may choose their supplier. It is based on simultaneous reverse combinatorial auctions, designed as a second-price sealed-bid multi-item auction with supply function bidding. This mechanism prevents strategic bidding and allows the auctioneer to maximise its pay-off. Furthermore, we develop optimal single-item and multi-item algorithms for winner determination in such auctions that are significantly less complex than those currently available in the literature. Nevertheless, the consumption of the energy of each singular auctioneer has to be adapted to the submitted bids to maximise the pay-off. Thus, this work models the constellation of energy consumers as a distributed constraint optimisation problem (dCOP). In order to overcome the specific domain demands, this book presents a novel optimal dCOP algorithm called COBB (Constraint Optimisation By Broadcasting), and adapts state-of-the-art counterparts. Empirical comparisons show that COBB clearly outperforms all of them. The deregulation of the energy industry has created marketplaces in which producers and consumers can operate in order to more effectively. This book develops a new model for electricity retail where customers may choose their supplier. It is based on simultaneous reverse...



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