动力经济

求解计及输电约束的线性供给函数均衡模型的分支定界方法

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摘要：

在计算线性供给函数均衡模型(linear supply function equilibrium，LSFE)的过程中，通常需要多次求解各发电商 (generation company，GenCo)个体所对应的双层优化问题。提出采用分支定界方法求解计及输电约束的线性供 给函数均衡问题。采用分支剪支操作处理互补松弛约束，仅需要计算少量的子优化问题，就可以达到遍历所有系统 松弛子模式的效果。通过3节点系统和IEEE 30节点系统2个算例可以看出，所提算法具有很好的搜索效率，为求解 大规模电力市场均衡问题提供了一条有效途径。

关键词：　线性供给函数　分支定界方法　互补松弛约束　松弛子模式

Branch and Bound Approach to the Solution of the Linear Supply Function Equilibrium Model in Presence of Network Constraints

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Abstract:

In the computing process of the linear supply function equilibrium, it frequently requires to solve bi-level optimization problems faced by each generation company (GenCo). A new approach adopting the branch and bound technique is proposed to compute the equilibrium point of the linear supply function model in presence of transmission constraints. This approach deals with the complementarity slack constraints by branching and pruning, and can verify all the slack sub-modes by computing a few sub-optmization problems. As illustrated by the 3-bus system and the IEEE 30-bus system, the proposed method has good search performance and provides an efficient way to compute the equilibrium solution for electricity markets.

Keywords: linear supply function　branch and bound approach　complementarity slack constraint　slack sub-mode

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