北京理工大學

数学与统计学院学术报告

Solving Bilevel Programs Based on Lower-level Duality

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邀请人： 李庆娜 教授

摘　要： We focus on bilevel programs, which have many applications in practice. It is generally necessary to transform bilevel programs into single-level optimization problems. The most popular approach is to replace the lower-level programs by their KKT conditions and then bilevel programs can be reformulated as mathematical programs with equilibrium constraints (MPEC). However, since MPECs do not satisfy the MFCQ at any feasible point, the well-developed nonlinear programming theory cannot be applied to MPECs directly. Recently, we apply the lower-level Wolfe duality and the lower-level Mond-Weir duality to present three new single-level reformulations for bilevel programs. We show through examples that the new reformulations may satisfy the MFCQ at their feasible points. We investigate their properties and the relations with the MPEC reformulation. We further propose some relaxation methods and numerical experiments indicate that, although solving the new reformulations directly does not perform very well in our tests, the relaxation methods are greatly better than the MPEC approach.

报告人简介： 林贵华，上海大学伟长学者特聘教授，上海高水平地方高校重点创新团队负责人，入选上海领军人才计划、辽宁省百千万人才工程等。研究兴趣主要是与均衡相关的各种最优化问题及其在管理科学中的应用，在INFORMS Journal on Computing、Mathematical Programming、SIAM Journal on Optimization等国际知名期刊发表学术论文100余篇。主持国家自然科学基金项目4项、国家自科重点项目子课题2项、省部级项目6项。现任中国双法会经济数学与管理数学分会副理事长、中国运筹学会数学规划分会资深理事、上海运筹学会理事等，《Pacific Journal of Optimization》、《运筹与管理》编委。所指导研究生获得国家四青人才2人、省部级人才3人。

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