

CALL FOR CHAPTERS

Bilevel Programming: Theory and Applications

Dear prospective authors, especially the lecturers, presenters, and participants of the 1st International Workshop on Bilevel Programming (IWOBIP'16, Monterrey, Mexico, March 07 – 11, 2016), and of the forthcoming International Conference on Bilevel Optimization (ICBO'2016, Dresden, Germany, May 04 – 06, 2016)!

Based upon an agreement with Bentham *e*-Books (Bentham Science Publishers, Sharjah, UAE), we, as invited Guest Editors to the edited volume, call for your submission of chapters to a new *e*-Book “Bilevel Programming: Theory and Application” that will be published by the said publishing house in the series *Frontiers in Information System*.

Although many applications fit the bilevel programming (BLP) and bilevel optimal control (BOC) framework, real-life implementations are scarce, mainly due to the lack of efficient algorithms for tackling medium- and large-scale BLP and BOC problems. Solving a BLP (or, BOC) problem, even the simplest one, is a difficult task. Many alternative methods may be used, but there is no general method that guarantees convergence or optimality for each problem.

Mixed-integer BLPs (MIBLP) with part of variables being integer are even harder for the conventional optimization techniques. For instance, a replacement of the lower-level (LL) optimization problem with the KKT conditions may fail if some LL variables are not continuous. Therefore, the solid theoretical base including elements of combinatorial methods is necessary to propose efficient algorithms aimed at finding local or global solutions of such problems.

Many new applied problems in the energy networks have recently arisen that can be efficiently solved only as MIBLPs: The natural gas cash-out problem, the deregulated electricity market equilibrium problem, biofuel problems, a problem of designing coupled energy carrier networks, etc. Bilevel models to describe migration processes have also become very popular in the area of BLP and BOC.

Engineering applications of bilevel optimization and combinatorial problems also include facility location, environmental regulation, energy and agricultural policies, hazardous materials management, and optimal designs for chemical and biotechnological processes.

The primary purpose of the announced *e*-Book is to discuss these problems with the researchers working in these areas. We expect chapter contributions from teams headed by active, eminent scientists having high (at least 10) Hirsch- and citation indices, with a focus on one or more themes of current interest.

Potential topics include, but are not limited to:

- Fundamentals of variational inequality theory, BLP, BOC, and combinatorial optimization
- Conjectural variations equilibrium and its applications to decision processes

- BLP and BOC problems and their reduction to single-level ones
- Bilevel Optimal Control (BOC) problems and their applications
- Logistic problems
- Heuristics for BLP and BOC problems
- Equilibrium in models of classical and mixed oligopoly

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