Announcement: Howard Rosenbrock Prize 2020

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Every year, *Optimization and Engineering* (OPTE) honors excellence in scientific research by presenting the Rosenbrock Prize to the best paper we published the previous year. The prize recognizes outstanding research contributions that demonstrate Howard Rosenbrock's own dedication to bridging the gap between optimization and engineering. I am delighted to announce this year's winners of the 2020 Rosenbrock Prize are **Martine Labbé, Fränk Plain, and Martin Schmidt** for their paper, **Bookings in the European gas market: characterization of feasibility and computational complexity results** (Labbé et al. 2020). Martine Labbé and Fränk Plain are professors at Université Libre de Bruxelles, and Martin Schmidt is professor at Trier University. The authors will receive a \$500 prize sponsored by Springer.

This year's winning paper was chosen by a committee consisting of committee-chair Luis Zuluaga (Lehigh University, USA) and committee-members Michel Gamache (Polytechnique Montreal, Canada) and Frauke Liers (Friedrich-Alexander-Universität, Germany). The committee produced the following citation for the selected paper:

The authors consider the complex problem of issuing gas capacity right contracts in the European gas market. Such capacity contracts, called bookings, guarantee the right to supply or withdraw gas at nodes in the network within certain bounds. A characteristic of the European gas market is that for a set of bookings to be issued, they must be “robustly” feasible. This means it has to be ensured that every gas nomination compliant with the bookings can be transported through the network. The well-known gas nomination problem finds out whether it is possible to transport a balanced gas scenario through the network without violating any constraints. To address this problem, the authors first use an appropriate decomposition of the problem to provide a characterization of the bookings that are robustly feasible. This characterization allows the authors to study the complexity of the problem. They show that, in general,

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the corresponding decision problem is in coNP. However, in the most relevant case in practice, in which the network is assumed to be tree-shaped, the authors derive a dynamic programming algorithm that allows the problem to be solved within polynomial time. The authors also extend their results to network problems with other potential functions beyond the one used to characterize the steady-state gas flow. For example, they show that for linear potential functions, the problem is contained in the complexity class P. This opens the possibility of their results being applied to other commodity markets. This paper is an excellent example of research into an important and complex engineering problem through new theoretical insights and novel optimization techniques, and insightful extensions of sophisticated solution algorithms.

Previous winners of the award were Jason E. Hicken in 2014 (Hicken 2014), Moritz Simon and Michael Ulbrich in 2015 (Simon and Ulbrich 2015), Taedong Kim and Stephen J. Wright in 2016 (Kim and Wright 2016), Hoai An Le Thi and Tao Pham Dinh in 2017 (Thi and Dinh 2017), Laurent Hoeltgen, Michael Breuß, Gert Herold, and Ennes Sarrad in 2018 (Hoeltgen et al. 2018), and Robert Burlacu, Herbert Egger, Martin Groß, Alexander Martin, Marc E. Pfetsch, Lars Schewe, Mathias Sirvent, and Martin Skutella in 2019 (Burlacu et al. 2019).

OPTE is an intellectual forum for engineers and optimization researchers. We feature cutting-edge optimization research as well as challenging and successful optimization implementations in engineering. We invite researchers to submit high-quality papers discussing algorithms, applications, and theory at the intersection of optimization and engineering.

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