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Application of nonconvex subdifferentials for solving semi-obnoxious facility location problems

The problem of locating a new facility with simultaneous consideration of existing attraction and repulsion points is a single-objective nonconvex location problem with great practical relevance. We will present a new approach for (approximately) solving such problems using nonconvex subdifferentials. While there are many theoretical results on these subdifferentials, it is rarely possible to explicitly calculate them. We will show that by taking advantage of the special structure of the mentioned problems, it is here for once possible to precisely calculate the corresponding subdifferentials. Furthermore, we will use these results to establish algorithms for solving the semi-obnoxious facility location problem based on different kinds of distance functions. At the end of the talk, we will give an outlook on possible future developments.