

Benders' decomposition for set covering problems with almost consecutive ones property

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Abstract

Finding good locations for stops in a given network is usually the first and a very important step in setting up a public transportation network for traffic planning. In many applications the stop location problem can be modelled as a set covering problem with coefficient matrix which almost satisfies the consecutive ones property. On the one hand, the set covering problem is one of Karp's 21 NP-complete problems, whereas on the other hand, problems with coefficient matrices satisfying the consecutive ones property can be solved very efficiently. Therefore it might be promising to search for efficient ways to solve set covering problems with almost, but not quite, consecutive ones property. In my talk I will describe how Bender's decomposition is one of these ways and to what extent.