The Constrained-Routing and Spectrum Assignment Problem: Valid Inequalities and Branch-and-Cut Algorithm.

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Abstract

In this paper, we study a variant of the Routing and Spectrum Assignment problem (RSA), namely the Constrained-Routing and Spectrum Assignment (C-RSA). First, we give an integer linear programming based on the so-called cut formulation. Moreover, we investigate the related polyhedron and describe several valid inequalities. We also prove that these inequalities are facet-defining for the polyhedron under some necessary and sufficient conditions. In addition, we devise separation routines for these inequalities. Based on this, we propose a Branch-and-Cut algorithm for the problem along with an extensive computational study showing the effectiveness of our approach.

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