

## **Multidimensional tropical optimization problems with applications to job scheduling**

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Optimization problems are considered which are formulated and solved in the tropical mathematics setting. The problems are to minimize or maximize functions defined on vectors of finite-dimensional semimodules over idempotent semifields, subject to linear inequality and equality constraints. The objective functions can be linear or take the form of non-linear functions calculated by using a conjugate transposition of vectors. We give an overview of known problems and briefly discuss available solution methods. Furthermore, recent results on the solution of certain new problems are presented which give the problems direct explicit solutions in a compact vector form.

We apply the obtained results to solve scheduling problems for a set of jobs operating under various precedence relations in the form of start-start, start-finish, early-start, late-finish and other temporal constraints. The problems are formulated to find optimal schedules according to certain optimality criteria, which involve the minimization of the maximum deviation of job completion times from given due dates, the minimization and maximization of the maximum deviation time between job completion times, and the minimization of the maximum job flow (processing) time.