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TITLE:
Improving the splitting preconditioner for linear systems from interior point methods

ABSTRACT:
We are concerned with the linear systems arising when an interior point method is applied to solve large-scale linear programming problems. The choice of an effective preconditioner is essential for the success of the iterative methods approach for solving these systems. We propose a new ordering for the splitting preconditioner, taking advantage of the sparse structure of the original matrix. A formal demonstration shows that performing this new ordering, the condition number of the preconditioned matrix is limited. Case studies show that the proposed idea is competitive with direct methods because the linear system has a better condition number than the original one and with the new ordering, the running time is reduced.