1068-90-98 **Meiyun Y. He** (myhe@umd.edu) and **Andre L. Tits*** (andre@umd.edu). *Infeasible Constraint-Reduced Interior-Point for Linear Optimization.*

Constraint-reduction schemes have been proposed for the solution by interior-point methods of linear programs with many more inequality constraints than variables in standard dual form. Such schemes have been shown to be provably convergent and highly efficient in practice. A critical requirement of these schemes is the availability of an initial dual-feasible point.

In this paper, building on a general framework for dual-feasible constraint-reduced interior-point optimization, we propose a framework for "infeasible" constraint-reduced interior-point optimization. Central to this framework is an exact (ℓ_1 or ℓ_∞) penalty function scheme endowed with a mechanism for iterative adjustment of the penalty parameter. Finiteness of the sequence of penalty parameter adjustments is proved under mild assumptions for all algorithms that fit within the framework, including "infeasible" extensions of a "dual" algorithm proposed in the early 1990s and of two recently proposed "primal-dual" algorithms. Finally, for the case of a constraint-reduced variant of Mehrotra's Predictor-Corrector algorithm, further convergence results are proved, and numerical results are reported that demonstrate that the approach is of practical interest. (Received January 14, 2011)