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Interior path following primal-dual algorithms. I: Linear programming. (English)

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Authors' abstract: "We describe a primal-dual interior point algorithm for linear programming problems which requires a total of $O(\sqrt{n}L)$ number of iterations, where L is the input size. Each iteration updates a penalty parameter and finds the Newton direction associated with the Karush-Kuhn-Tucker system of equations which characterizes a solution of the logarithmic barrier function problem. The algorithm is based on the path following idea."

[For part II see the authors, *ibid.* A 44, No.1, 43-66 (1989; Zbl 0676.90039).]

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MSC:

90C05 Linear programming
65K05 Numerical mathematical programming methods
68Q25 Analysis of algorithms and problem complexity

Cited in **7** Reviews
Cited in **147** Documents

Keywords:

polynomial-time algorithms; primal-dual interior point algorithm; logarithmic barrier function; path following

Full Text: DOI

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