Singularly Perturbed Nonlinear ODEs And Interior Point Optimizationalgorithms

Ezzine, J. Ben-Daya, M.;Dept. of Syst. Eng., King Fahd Univ. of Pet.Miner., Dhahran;
American Control Conference, 1995. Proceedings of the;Publication Date: 21-23 Jun 1995;Vol: 3,On page(s): 1816-1820 vol.3;ISBN: 0-7803-2445-5
King Fahd University of Petroleum & Minerals

http://www.kfupm.edu.sa

Summary

This paper explores the continuous realizations of iterative processes emanating from interior point optimization algorithms, and their connection with nonlinear singularly-perturbed ordinary differential equations. This mathematical connection provides a theoretical framework for the analysis of the dynamical properties long known and exploited in interior point-based optimization techniques. In addition, this connection is used to show that the logarithmic barrier function is indeed, in some sense, optimum