

SEMINÁRIO

23 de Junho de 2009

(Departamento de Matemática, sala Sousa Pinto, 12:00-13:00)

Título: Interior Point Methods for Complementarity Problems.

Orador: Professor Florian A. Potra, Department of Mathematics and Statistics, University of Maryland, Baltimore County (UMBC), USA.

(potra@math.umbc.edu)

Abstract: Complementarity is ubiquitous in the natural and social sciences. It is a fundamental principle underlying equilibrium. In a primal-dual description of a system it means that either the primal or the corresponding dual component of the solution vector must vanish. There are many problems that can be naturally modeled as complementarity problems (CPs). Applications of complementarity problems are prevalent, especially in economics and engineering. Over the years, research on

complementarity has provided new methodologies, enhanced our understanding of algorithms, and permitted novel applications. A major source of complementarity problems arises from the optimality conditions of general constrained optimization problems. In particular, linear programming (LP) and convex quadratic programming (QP) can be written as linear complementarity problems. The linear complementarity problem (LCP) has played an important unifying role in operations research since its introduction more than three decades ago. Interior point methods (IPMs) initially developed for LP have been generalized early on to LCP and then to various classes of CPs. The talk gives a short survey of IPMs for LCPs with emphasis on algorithms that have both polynomial complexity and superlinear convergence. Some recent results obtained by the author and his collaborators are briefly summarized and several directions of future research are proposed.

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