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Departament d'Estadística
I Investigació Operativa

Seminari RDi sobre problemes de Complementarietat

Dimarts 20 de novembre del 2012

12:00h, a l'aula C5-016 del Campus Nord UPC (BarcelonaTech)

Prof. **Joaquim J. Júdice**

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2012 EUROPT Fellow

Complementarity Problems and Variational Inequalities

Summary:

A Complementarity Problem (CP) is an optimization problem containing a number of complementary variables x_i and w_i satisfying constraints of the form $x_i w_i = 0$. This problem has found many applications in different areas of science, engineering, transportation, economics and finance. A number of extensions of this problem have been considered in the literature, namely Variational Inequalities (VI), Optimization Problems with Complementarity Constraints (OPTCC) and more recently Eigenvalue Complementarity Problems (EiCP). In this talk all these problems are defined together with a brief summary of their applications. Some existence results for these problems are reviewed. A number of efficient direct and iterative algorithms have been proposed to process the CP, VI, OPTCC and EiCP by finding stationary points of appropriate merit functions. These algorithms are introduced, together with their benefits and drawbacks. In particular, these techniques require special classes of matrices for guaranteeing that those stationary points are solutions of the problems. In general, only enumerative algorithms are able to solve CP, VI, OPTCC and EiCP. The most important of these methods are also presented. A number of numerical results are reported to illustrate the efficacy and efficiency of the techniques discussed in the talk.

Bio:

Joaquim João Júdice is a Retired Full Professor of the Department of Mathematics of University of Coimbra, since November 2011. He is also a current member of the Instituto de Telecomunicações of Portugal. He is an Associate Editor of 13 international research journals in the areas of Mathematics and Operational Research. He was referee of several papers submitted to 38 different international journals. He was in the Organizing Committee of 22 national and international conferences and in the Scientific Committee of 58 conferences. He was Director of the Department of Mathematics of the University of Coimbra for two years, President of Centro Internacional de Matemática (CIM) for four years, President of the Portuguese Operational Society (APDIO) for two years and Vice-President of the Portuguese Mathematical Society (SPM) for two years. He received the 2012 EUROPT Fellow. He is author or co-author of 64 papers in international research journals, 14 in national journals with referee and 23 in edited volumes with referee and of 19 books and lecture notes.