

Departamento de Matemáticas

Global Optimization of Nonconvex Nonlinear Generalized Disjunctive Programs

Abstract: In this seminar, we first describe the theory of reformulations and numerical solution of generalized disjunctive programming (GDP) problems, which are expressed in terms of Boolean and continuous variables, and involve algebraic constraints, disjunctions and propositional logic statements. We propose a framework to generate alternative MINLP formulations for convex nonlinear GDPs that lead to stronger relaxations.

Next, by using the above theory, we address the global optimization of nonconvex nonlinear generalized disjunctive programming (GDP) problems. In order to predict tighter lower bounds to the global optimum we consider a sequence of basic steps for the convex relaxation to strengthen the bounds and finally we describe some solution methods.

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Lugar: Seminario de Matemáticas.

Information on the speaker

Prof. Ignacio E. Grossmann is the R. R. Dean University Professor of Chemical Engineering at Carnegie Mellon, and member of the "Center for Advanced Process Decision-making." A member of the National Academy of Engineering, he has received many awards, including the first Sargent Medal by the Institution of Chemical Engineers. His research interests are in discrete and nonlinear optimization under uncertainty, energy systems, and planning and scheduling. He has supervised 58 Ph.D. students. He has published 730 works (with 29.359 citations, Scopus), 49 of them reviewed in the mathematical data base MathSciNet (with 357 citations in mathematical journals).