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Nonlinear optimization applications using the GAMS technology. (English)

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[Springer Optimization and Its Applications](#) 81. New York, NY: Springer (ISBN 978-1-4614-6796-0/hbk; 978-1-4614-6797-7/ebook). xxii, 340 p. (2013).

The authors present a wide spectrum of applications of the mathematical programming using the GAMS (General Algebraic Modelling System) language. The book presents the applications in the general form, and focuses on the local optima of the continuous optimization problems. First two chapters of the book introduce the basics of mathematical modeling and GAMS technology. In chapter 3 chosen algorithms and problems are presented. Next chapters focus on specific areas of applications, in particular mechanical engineering, electrical engineering, chemical engineering, fluid and gas dynamics, economic growth, water management and optimal control. The book is self-contained and will be a valuable reference for graduate and PhD. students, as well as the researchers in the area of mathematical programming.

Reviewer: [Marcin Anholcer \(Poznan\)](#)

MSC:

[90-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to operations research and mathematical programming

[90C30](#) Nonlinear programming

[90C90](#) Applications of mathematical programming

[49J15](#) Existence theories for optimal control problems involving ordinary differential equations

[49J20](#) Existence theories for optimal control problems involving partial differential equations

[65H10](#) Numerical computation of solutions to systems of equations

[90C25](#) Convex programming

[90C26](#) Nonconvex programming, global optimization

Cited in **2** Documents

Keywords:

[Mathematical modeling](#); [Mathematical programming](#); [Algebraically oriented language](#); [GAMS language](#); [Applications of mathematical programming](#); [Mechanical engineering](#); [Electrical engineering](#); [Chemical engineering](#); [Economic growth](#); [Optimal control](#); [Continuous optimization](#)

Software:

[MINPACK-2](#); [SPENBAR](#) ; [SCALCG](#); [CAON](#); [GAMS](#); [DIRCOL](#); [INTBIS](#)

Full Text: [DOI](#)