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sorting. — J. Kacprzyk, H. Nurmi: Group decision making under fuzziness. — A. Billot: Elements of fuzzy game theory. — H. Rommelfanger, R. Slowinski: Fuzzy linear programming with single or multiple objective functions. — M. Sakawa: Fuzzy nonlinear programming with single or multiple objective functions. — S. Chanas, D. Kuchta: Discrete fuzzy optimization. — A.O. Esogbue, J. Kacprzyk: Fuzzy dynamic programming. — J. Gebhardt, M. A. Gil, R. Kruse: Fuzzy set-theoretic methods in statistics. — P. Diamond, H. Tanaka: Fuzzy regression analysis. — E. Kerre, T. Onisawa, B. Cappelle, I. Gazdik: Reliability. — A.O. Esogbue, W.E. Hearnes II: Maintenance and replacement models under a fuzzy framework.

Biologie et sciences du comportement

D.J. DALEY and J. GANI. — **Epidemic modelling: an introduction.** — Cambridge studies in mathematical biology, vol. 15. — Un vol. relié, 15,5×23,5, de XII, 213 p. — ISBN 0-521-64079-2. — Prix: £30.00. — Cambridge, Cambridge University Press, 1999.

This is the general introduction to the ideas and techniques required to understand the mathematical modelling of diseases. It begins with an historical outline of some disease statistics dating from Daniel Bernoulli's smallpox data of 1760. The authors then describe simple deterministic and stochastic models in continuous and discrete time for epidemics taking place in either homogeneous or stratified (nonhomogeneous) populations. A range of techniques for constructing and analysing models is provided, mostly in the context of viral and bacterial diseases of human population. Questions of fitting data to models, and the use of models in understanding methods for controlling the spread of infection are discussed.

Systèmes, contrôle optimal

Arik A. MELIKYAN. — **Generalized characteristics of first order PDEs: applications in optimal control and differential games.** — Un vol. relié, 16,5×24, de XIV, 310 p. — ISBN 0-8176-3984-5. — Prix: SFr. 148.00. — Birkhäuser Verlag, Basel, 1998.

First-order PDEs possess two types of characteristics: regular (classical) and singular. It is proved that singular surfaces, generally, can be constructed using singular characteristics (SC). Both regular and singular characteristics allow the solution to the PDE to be constructed. The technique developed is called the method of singular characteristics (MSC). A classification of SC is suggested and the corresponding ODE-systems are derived. The MSC is applied to several problems in control and game theory to solve the so-called HJB-equation. Singular paths are investigated in differential games on a Riemannian manifold with nonunique shortest geodesics connecting two points; complete solutions are constructed for games on two-dimensional cones.