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Ana-Maria Croicu* (acroicu@math.fsu.edu), Florida State University, School of Computational Science, Department of Mathematics, Tallahassee, FL 32306-4120, and **M. Yousuff Hussaini**. *Stochastic optimization models with applications to mechanics, population dynamics, aerodynamics.*

Optimization theory, one of the oldest and mature branches of mathematics, has ubiquitous applications in scientific and engineering applications. The main goal of these real world applications is finding the best choice, the optimum point, which yields the most satisfactory solution, in some sense, of the problem under investigation. When the conditions or parameters of the optimization problem are not all known or random, the optimization is said to be under "uncertainty", and the notion of "optimum" is not well-defined yet. A comparison between two different approaches (the expected optimal criterion and the optimal expected criterion) is provided, with the emphasis on practical applications to free undamped vibration, population growth, Burgers equation, airfoil shape optimization. (Received September 20, 2005)