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Physics and Operational Research: measure of uncertainty via Nonlinear Programming YASSER A. DAVIZON-CASTILLO[1], Arizona State University — Physics and Operational Research presents an interdisciplinary interaction in problems such as Quantum Mechanics, Classical Mechanics and Statistical Mechanics. The nonlinear nature of the physical phenomena in a single well and double well quantum systems is resolved via Nonlinear Programming (NLP) techniques (Kuhn-Tucker conditions, Dynamic Programming) subject to Heisenberg Uncertainty Principle and an extended equality uncertainty relation to exploit the NLP Lagrangian method. This review addresses problems in Kinematics and Thermal Physics developing uncertainty relations for each case of study, under a novel way to quantify uncertainty.

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