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Physics of Large Scale Production Systems under Uncertainty
YASSER A. DAVIZON-CASTILLO, Department of Industrial Engineering, Arizona State University — Large Scale Production Systems (LSPS) are analyzed from the physics perspective based on the measure of uncertainty. A novel approach to quantify uncertainty is presented using Little's law and Uncertainty Inequalities in Throughput and Work in Process. The extended version of an Uncertainty equality relation is used to measure the levels of uncertainty in the LSPS in a Nonlinear Programming context. Conservation of Energy Principle is used to determine the measure of uncertainty overall the system. The main contribution is the analogy from the physical phenomena to a LSPS arena using the Conservation of Energy Principle.

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