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Steven A Bleiler* (bleilers@pdx.edu), Fariborz Maseeh Dept. of Math and Stat, Portland State University, P.O. Box 751, Portland, OR 97207-0751, and **Thomas R Fielden**. *Optimization under Uncertainty and Algorithmic Correlation of Random Variables – Theory*. Preliminary report.

Many algorithms (e.g. linear programming) are well understood when the inputs are sharp. An entirely different situation arises when inputs are replaced with random variables. In these situations Monte Carlo and other sampling based methods are typically employed for uncertainty, sensitivity, and risk analyses. Recent advances in the theory of how certain algorithms (including linear programming) induce correlations among the intermediate and terminal model variables produced as the algorithm proceeds now allow an alternative approach. In this approach random variables are represented directly (i.e. without sampling) and outputs appear as similarly represented random variables. This development avoids both the “clusters and gaps” of randomly sampled inputs and “histogram binning problem” over the outputs that are hallmarks of sampling based methods. (Received September 16, 2011)