

JOINT CHANCE CONSTRAINED PROGRAMMING WITH DEPENDENT PARAMETERS

Nada Hafez, Afaf El-Dash and Nagwa Albehery

Abstract

In this paper, we consider joint chance constrained programming (JCCP) technique, where two probabilistic constraints are required to jointly satisfy at least the tolerance measure α . We introduce a suggested approach to obtain an equivalent deterministic model for probabilistic model with joint chance constraints (JCCs) when the RHS parameters are dependent random variables, and distributed as (i) single-parameter exponential distributions (S-PED), (ii) two-parameter exponential distributions (T-PED), which is more applicable in most real life applications than the S-PED; since it avoids having its mode at the origin. The joint density function of random RHS parameters is assumed to be the Downton bivariate exponential distribution.

It was shown that the suggested equivalent deterministic model under the assumption of S-PED is a special case of the corresponding equivalent model under the assumption of T-PED when the second parameter is zero. Also, the equivalent deterministic model under the assumption of independence between random parameters is a special case of the suggested equivalent deterministic model under the assumption of dependence when the correlation coefficient is zero.