AN ALGORITHM FOR SOLVING NONLINEAR GOAL PROGRAMMING PROBLEMS:

"A SEQUENTIAL DOUBLE CONDENSED GEOMETRIC GOAL PROGRAMMING (S.D.C.G.G.P.) ALGORITHM"

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ABSTRACT

In this paper, we present a set of propositions and their results, which make it possible to formulate a nonlinear goal program as a sequence of generalized geometric programs. Then a (S.D.C.G.G.P.) algorithm is constructed by combining a sequential goal programming algorithm due to Dauer & Krueger with a double condensed geometric programming algorithm due to Avriel, Dembo and Passy. A (S.D.C.G.G.P.) algorithm is capable to solve nonlinear goal programs generally and signomial goal programms which are equivalent to probabilitic goal programs in particular.

By using this algorithm, we guarantee to obtain a local or a better local minimum point for each of subprograms of a nonlinear goal program. Also, if for the nonlinear goal program, subprograms $1, 2, \ldots, k-1$ are linear or posynomial programs (which have zero degree of difficulty) and subprograms $k, k+1, \ldots, K$ are signomial programs, then by using the presented algorith, we obtain the

global solutions of the subprograms $1,2,\ldots,k-1$. In turn, it gives detailed informations about the accoplishment for each objective according to their priorities.

Finally, a simple numerical example is given to illustrate the formulation and the procedures of the algorithm.