GENERAL SYSTEM THEORY AND MATHEMATICAL PHYSICS

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The purpose of the paper is to lay a bridge between two sciences: general systems teory and mathematical physics. We consider a branch manufacturing model when general factories produce the intermediate wares. The final production is assembled from these wares in the central plant. The decision maker takes the plan of the next year which is proportional to the last one. The coceficient of the proportionality is maximized. The block structure linear programming problem with the specific coupling restriction is obtained where the coupling matrix consists of the diagonal submatrixes. This problem is solved by means of the two level decomposition method based on iterative aggregation. The approach is enlarged upon a wide class of hierarchical optimization problems including nonlinear ones without additional difficult procedures of linearization and approximation as for well known Danzig-Wolfe's algorithm. In particular, we introduce new hierarchical systems where the subsystems are described by by the partial differential equations of the different types. The non seperable case (interconnected subsystems) is investigeted too.