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THEORIE DER LINEAREN DEKOMPOSITION

(The Theory of Linear Decomposition)

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The present studies in the field of mathematical programming are directed towards special linear programming problems and general nonlinear programming problems.

The special linear programming problems include the problems of decomposition of problems of big proportions. The reason why these problems are tackled derives partly out of necessity, that is out of the use of electronic computers with limited capacities for solving problems of big proportions; on the other hand, by decomposing the big problems into small problems, interesting relations of a part out of a whole with the whole itself are outlined and can be treated.

The author presents in a unitary form the results obtained in this field, analysing the relation between the existing results and developing the problem of Kronsjö's double decomposition.

The author also presents two new decomposition methods.

As results from the title of the book, the author is not dealing with the decomposition of nonlinear problems, with discrete variables of dynamic programming nor with the decomposition of network problems.

Among the indirect methods, the methods of Dantzig-Wolfe and Benders are presented and compared.

Among the direct methods, Rosen's method which is closely linked with Dinkelbach's parametric case and Balos's method, which is a special method of admissible directions are dwelt on.

Kronsjö's method which is a development of the Dantzig-Wolfe method and Liptak's method which is applied to unstructured problems and which is called two level planning are further analysed.

By this book, the unitary treatment of the linear decomposition methods is being completed.

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