

## DEFINITION OF THE NARROW INTERVALS FOR VARIABLES IN THE INTEGER-VALUED KNAPSACK PROBLEM

K. SH. MAMEDOV

ABSTRACT. The paper presents a method for decreasing the length of the giving intervals of variables in the integer valued knapsack problem. The method based on criteria, which formulated as a theorem of sufficiency. It is shown, that the coordinates of the optimal decision are included into the following intervals:

$$x_j \in \left[ d_j - \left\lceil \frac{\bar{f} - f}{|l_j|} \right\rceil, d_j \right], \quad j = \overline{1, k-1},$$
$$x_j \in \left[ 0, \left\lceil \frac{\bar{f} - f}{|l_j|} \right\rceil \right], \quad j = \overline{k+1, n}.$$

Here,  $d_j$  ( $j = \overline{1, n}$ ) is the upper bound of the variables,  $\bar{f}$  and  $f$  are the upper and low bounds of the optimum of objective function accordingly,  $l_j = c_j - (c_k/a_k) a_j$ ; ( $j = \overline{1, n}$ ),  $k$ -number of coordinate of optimal solution appropriate to the relaxation problem, which received the fractional value,  $c_j$  and  $a_j$  ( $j = \overline{1, n}$ ) are the coefficients of the objective function and constraint accordingly.

Computational experiments are shown the highly efficiency of the suggested method.