

SEARCH FOR THE PARETO POINT BASED ON THE MAXIMIN PRINCIPLE OF IMPROVEMENT RATES OF OBJECTIVE FUNCTIONS

A. TAUTS, L. KRUMM*

Department of Electrical Power Engineering
Tallinn University of Technology
5, Ehitajate Rd., Tallinn 19086, Estonia

The aim of this paper is to find the Pareto point for the numerical value of objective functions $F_1(x), \dots, F_n(x)$ with the argument x belonging to a certain Hilbert space. Starting from a fixed point x_0 , the optimization trajectory is chosen in such a way that on every step the improvement rate of the value of the slowest improvement of the objective function be possibly great. It is proved that on every step one has to choose the non-negative coefficients $\alpha_1, \dots, \alpha_n$ with the constraint $\sum_{i=1}^n \alpha_i = 1$, so that the norm of the gradient of the function $\sum_{i=1}^n \alpha_i F_i(x)$ is minimal, and then to make the next step in the direction of the chosen gradient.

* Corresponding author: e-mail eelab@eeri.ee