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Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

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Estimates of Complexity of the Vector Ordering Problem
The set of admissible solutions is the set $X = \{x\}$ of all $n!$ permutations $x = (i_1, i_2, ..., i_n)$ of numbers $1, 2, ..., n$. The vector objective function (VOF) is defined on X: $F(x) = (F_1(x), F_2(x)), F_\nu(x) \in \{\varphi_\nu, \psi_\nu(x)\}, 1 \leq \nu \leq 2, \varphi_\nu(x) = \sum\limits_{k=1}^{n} \alpha_{i_k}^\nu z_{i_k}^\nu \to min, \psi_\nu(x) = \max_{1\leq k\leq n} \alpha_{i_k}^\nu z_{i_k}^\nu \to min, z_{i_k}^\nu = max(t_{i_k} - D_{i_k}^\nu, 0), t_{i_k} = \sum\limits_{s=1}^{k} T_{i_s}$. VOF determines Pareto set $\tilde{\mathrm{X}} \subseteq X$. Required solution is the complete set of alternatives (CSA) X^0 where the subset $X^0 \subseteq \tilde{\mathrm{X}}$ satisfies the equality $F(X^0) = F(\tilde{\mathrm{X}}) = \{F(\tilde{\mathrm{x}}) : \tilde{\mathrm{x}} \in \tilde{\mathrm{X}}\}$ and has minimal cardinality $\mid X^0 \mid$. Theorem 1. If criteria $F_\nu(x)$. have a view $\varphi_\nu(x)$, then maximal cardinality of CSA $\mid X^0 \mid = n!$. Theorem 2. If one of the criterion $\varphi_\nu(x)$ has a view $\psi_\nu(x)$. then maximal cardinality of CSA $\mid X^0 \mid \geq 2^n$.