Kernels in Transitively Orientable Graphs

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Kernel represents an abstract generalization of a concept of solution for cooperative games. These structures have many applications in game theory.[1] We will recall that kernel is a subset of vertices K of the directed graph $\overrightarrow{G} = (X;U)$ when K does not contain adjacent vertices and every vertex in $X \setminus K$ has a successor in K.[2]

Definition 1. *[3] Graph $F = (X_F;U_F)$ is called B-stable subgraph of the undirected graph $G = (X;U)$ if F is stable subgraph of G and for every stable subgraph M of G one of the following conditions is satisfied:*

1. $X_F \cap X_M = \emptyset$;
2. $X_F \subseteq X_M$.

Theorem 1. *If K is a kernel of the transitively oriented graph $\overrightarrow{G} = (X;\overrightarrow{U})$ and $x_i, x_j \in K$ then $x_i \in X_{F_i}$ and $x_j \in X_{F_j}$, $i \neq j$, where F_i, F_j are B-stable directed subgraphs of the graph G.*

Bibliography

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