

Upper bound graphs and forbidden subposets

Ayumi Kawamura, Kenjiro Ogawa, Satoshi Tagusari*, Morimasa Tsuchiya, Tokai University

We consider induced subposets and induced subgraphs on upper bound graphs. We deal with concepts of the vertex-edge relation inclusion poset $\text{VE}_{\text{poset}}(P)$ of a poset P and the vertex-edge inclusion poset $\text{VE}_{\text{graph}}(G)$ of a graph G . We show that H is an induced subgraph of the upper bound graph of a poset P if and only if $\text{VE}_{\text{graph}}(H)$ is an induced subposet of $\text{VE}_{\text{poset}}(P)$. Using this result, we give forbidden subposets of $\text{VE}_{\text{poset}}(P)$ on interval upper bound graphs. We also consider double bound graphs and obtain a characterization of interval double bound graphs in terms of forbidden subposets.

Keywords: upper bound graph, double bound graph, poset, vertex-edge inclusion poset