Maximal Vertex-Connectivity of $\overrightarrow{A_{n,k}}$

Nart Shawash
Oakland University

April 7, 2006

Abstract

Arrangement graph $A_{n,k}$ has a vertex set labeled by all the arrangements of $k$ elements chosen from the ground set $\{1, 2, \ldots, n\}$. Two vertices are adjacent if their labels differ in exactly one of the $k$ positions. $A_{n,k}$ contains both Star $S_n$ and Alternating Group $A_n$ graphs as special cases. $A_{n,n-1} \cong S_n$ which was proposed as an alternative to hypercube $Q_n$, while $A_{n,n-2} \cong A_n$.

This talk presents modification to orientation of Arrangement graph previously given by Cheng and Lippman, and shows that a consequence of such an orientation is that unidirectional $A_{n,k}$ becomes maximally connected, that is $\overrightarrow{A_{n,k}}$ is $r$-connected, where $r = \min_{v \in V} \{\rho(v), \delta(v)\}$. 

1