

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

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## Abstract

Arrangement graph  $A_{n,k}$  has a vertex set labeled by all the arrangements of  $k$  elements chosen from the ground set  $\{1, 2, \dots, n\}$ . 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  $r = \min_{v \in V} \{\rho(v), \delta(v)\}$ .