On k-maximal digraphs

Janet Anderson, West Virginia University

Let $k > 0$ be an integer and let D be a simple digraph on $n \geq k+1$ vertices. We prove:

If $|A(D)| > k(2n-k-1) + \begin{pmatrix} n-k \\ 2 \end{pmatrix}$ then D must have a nontrivial subdigraph H such that the strong arc connectivity of H is at least $k+1$. We also show that this bound is best possible and present a constructive characterization for the extremal graphs.