

# A Joint Neighbor Bound for Primitive Digraphs

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## Abstract

For a primitive digraph  $D$ , the exponent of  $D$  is the smallest positive integer  $t$  such that for every pair of vertices  $u$  and  $v$  there is a directed walk from  $u$  to  $v$  of length  $t$ , and it is denoted by  $\exp(D)$ . The scrambling index of a primitive digraph  $D$  is the smallest positive integer  $m$  such that for every pair of vertices  $u$  and  $v$ , we can get to a vertex  $w$  in  $D$  by directed walks of length  $m$ , and it is denoted by  $k(D)$ . In this talk, we present upper bounds for  $k(D)$  in terms of the length of the shortest cycle of  $D$ , and compare with other primitive digraph parameters,  $\exp(D)$  and the Lewin index  $l(D)$ .