

# Cycle cover of strong tournaments

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A digraph  $D$  is strong if for any pair of distinct vertices  $u$  and  $v$ , there exists a  $(u, v)$ -dipath in  $D$ . A tournament  $T_n$  is an orientation of the complete graph  $K_n$ . A directed cycle (dicycle) cover of a tournament  $T_n$  is a family  $\mathcal{F}$  of dicycles of  $T_n$  such that each edge of  $E(T_n)$  is contained in at least one dicycle in  $\mathcal{F}$ . We prove that a tournament  $T_n$  has a dicycle cover if and only if  $T_n$  is strong, and that for any strong tournament  $T_n$ , the number of dicycles covering  $T_n$  is at most  $\frac{n(n-1)}{2} - n + 1$ . This bound is best possible.