

# Irregular labeling of digraphs

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Let  $\vec{G}$  be a directed graph of order  $n$  with no component of order less than 4, and let  $\Gamma$  be a finite Abelian group such that  $|\Gamma| \geq n + 6$ . We show that there exists a mapping  $\psi$  from the arc set  $E(\vec{G})$  of  $\vec{G}$  to an Abelian group  $\Gamma$  such that if we define a mapping  $\varphi_\psi$  from the vertex set  $V(\vec{G})$  of  $\vec{G}$  to  $\Gamma$  by

$$\varphi_\psi(x) = \sum_{y \in N^+(x)} \psi(xy) - \sum_{y \in N^-(x)} \psi(yx), \quad (x \in V(\vec{G})),$$

then  $\varphi_\psi$  is injective.