Decompositions, packings, and coverings of the complete digraph with orientations of $K_3 \cup \{e\}$. (English summary)


Summary: “There are eight orientations of the complete graph on three vertices with a pendant edge, $K_3 \cup \{e\}$. Two of these are 3-circuits with a pendant arc and the other six are transitive triples with a pendant arc. Necessary and sufficient conditions are given for decompositions, packings, and coverings of the complete digraph with each of these eight orientations of $K_3 \cup \{e\}$.”