

Highly arc transitive and descendant-homogeneous digraphs with finite out-valency

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Abstract

We investigate infinite highly arc transitive digraphs with two additional properties, descendant-homogeneity and Property Z. A digraph D is highly arc transitive if for each $s \geq 0$ the automorphism group of D is transitive on the set of directed paths of length s ; and D is descendant-homogeneous if any isomorphism between finite generated subdigraphs of D extends to an automorphism of D . A digraph is said to have property Z if it has a homomorphism onto a directed line. We show that if D is a highly arc transitive descendant-homogeneous digraph with Property Z and F is the subdigraph spanned by the descendant set of a directed line in D , then F is a locally finite 2-ended digraph with equal in and out-valencies. If, moreover, D has prime out-valency then there is only one possibility for the digraph F . This knowledge is used to classify the highly arc transitive descendant-homogeneous digraph of prime out-valency which have Property Z.

References

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