

GROWTH ALTERNATIVE FOR HECKE–KISELMAN MONOIDS

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Abstract: The Gelfand–Kirillov dimension of Hecke–Kiselman algebras defined by oriented graphs is studied. It is shown that the dimension is infinite if and only if the underlying graph contains two cycles connected by an (oriented) path. Moreover, in this case, the Hecke–Kiselman monoid contains a free noncommutative submonoid. The dimension is finite if and only if the monoid algebra satisfies a polynomial identity.

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Key words: Oriented simple graph, Hecke–Kiselman monoid, Gelfand–Kirillov dimension, growth alternative.