When is a Quotient of a Leavitt Path Algebra Isomorphic to a Leavitt Path Algebra?

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Abstract

In joint work with M. Özaydın we provide a complete answer to the question "When is a quotient of a Leavitt path algebra isomorphic to a Leavitt path algebra?" in terms of the interaction of the kernel of the quotient homomorphism with the cycles of the digraph. A key ingredient is the characterization of finitely generated projective (Leavitt path algebra) modules whose endomorphism algebras are finite dimensional. As a consequence of our characterization we get that any quotient of a Leavitt path algebra divided by its Jacobson radical is a Leavitt path algebra if the coefficient field is large enough. We define a stratification and a parametrization of the ideal space of a Leavitt path algebra (initially in terms of the digraph, later algebraically) and show that a generic quotient of a Leavitt path algebra is a Leavitt path algebra. Contrary to most algebraic properties of Leavitt path algebras, our criterion for a quotient to be isomorphic to a Leavitt path algebra is not independent of the field of coefficients.

Keywords
Leavitt path algebra, Ideals and quotients.

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References

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