

The Talented monoid of a graph and its connections with the Leavitt path algebra

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In this talk, we introduce an algebraic entity arising from a directed graph - the talented monoid. The talented monoid has an interesting relationship with the Leavitt path algebra. In fact, the group completion of the talented monoid was shown to be the graded Grothendieck group of the Leavitt path algebra. We show that a graph consists of disjoint cycles precisely when its talented monoid has a particular Jordan-Holder composition series. These are graphs whose associated Leavitt path algebras have finite Gelfand-Kirillov dimension. We show that this dimension can be determined as the length of suitable ideal series of the talented monoid. The last part of the talk is a brief overview of the talented monoid as an invariant for finite representation of Leavitt path algebras. This is a confirmation of the Graded Classification Conjecture of the Leavitt path algebras in the finite-dimensional case.