Concept of Socle, Jacobson Radical and Centers in Leavitt Path Algebras

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Leavitt path algebras, an algebraic structure corresponding to directed graphs, a combinatorial object, has been of interest to many mathematicians since 2004. If we have an algebraic structure, we are interested in the algebraic properties of this structure. In these lectures, we will focus on the minimal (left) ideals of Leavitt path algebras, and we will examine the concept of socle, which is the sum of these ideals. Similarly, the concept of the Jacobson radical defined as the intersection of maximal (left)-ideals will be discussed and examined in the context of Leavitt path algebras. Finally, we will consider the centers of Leavitt path algebras.