

**IRREDUCIBLE REPRESENTATIONS OF THE FREE ALGEBRA  
 $K \langle \alpha_1, \dots, \alpha_n \rangle$  THROUGH LEAVITT PATH ALGEBRAS**

FRANCESCA MANTESE

ABSTRACT. Let  $K$  be a field and  $E$  be the graph with a vertex  $v$  and  $n$  loops  $\alpha_1, \dots, \alpha_n$ . The associated Leavitt path algebra  $L_K(E)$  is a perfect left localization of the free algebra in  $n$  variables  $\Lambda = K \langle \alpha_1, \dots, \alpha_n \rangle$ , and the category of finitely presented simple  $L_K(E)$ -modules is a quotient category of the finitely presented simple modules over  $\Lambda$ . Applying methods and techniques for the study of simple modules over Leavitt path algebras, we obtain a better understanding of the finitely presented irreducible representation of  $\Lambda$ , and a characterization of its finitely generated maximal ideals.

DIPARTIMENTO DI INFORMATICA, UNIVERSITÀ DEGLI STUDI DI VERONA, STRADA LE GRAZIE 15, 37134  
VERONA, ITALY  
*Email address:* francesca.mantese@univr.it