

Matrix representations of finite Frobenius rings

Dominik Krasula

Charles University, Prague, Czechia

Abstract

A Peirce decomposition of a ring induces a representation as a formal matrix ring. This talk will show how the general theory of formal matrix rings can be used to study finite Frobenius rings.

A combinatorial criterion is given to decide whether a formal matrix ring has a prescribed Nakayama permutation. A finite Frobenius ring R can be represented as a block matrix ring, where the blocks on the diagonal are Frobenius rings corresponding to cycles in the Nakayama permutation of R . Local corner rings in each block are isomorphic rings with self-duality.

At the end of the talk, it is outlined how to glue two indecomposable Frobenius rings to a new indecomposable Frobenius ring, as long as there is a skew field K such that both rings have a simple module whose endomorphism ring is isomorphic to K .

Keywords

Formal matrix rings, Frobenius rings, Peirce decomposition.

References

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