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Alpha-determinant Cyclic Modules of $\mathfrak{gl}_n(\mathbb{C})$

The alpha-determinant unifies and interpolates the notion of the determinant and permanent. We determine the irreducible decomposition of the cyclic module of $\mathfrak{gl}_n(\mathbb{C})$ defined by the alpha-determinant. The degeneracy of the irreducible decomposition is determined by the content polynomial of a given partition.

Keywords: Schur module, Young symmetrizer, permanent, Frobenius notation, irreducible decomposition, cyclic module.

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