

Hall Polynomials for Representation Finite Cluster-Tilted Algebras

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Ringel-Hall algebras and Hall polynomials introduced and studied by Ringel. Ringel proved that every representation finite hereditary algebra has Hall polynomials. He also conjectured the existence of Hall polynomials for every representation finite algebra. But at present final result are available only in the hereditary case. In this talk we show that if A is a representation finite algebra such that any indecomposable A -module is uniquely determined by its dimension vector and for each $L, M \in \text{ind}(A)$ and $N \in \text{mod}(A)$, either $\mathcal{F}_{NL}^M = 0$ or $\mathcal{F}_{LN}^M = 0$ then A has Hall polynomials. As a consequence we show that any representation finite Cluster-tilted algebra has Hall polynomials.

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