

Note on right zero divisors in the ring of infinite upper triangular matrices over a field

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Abstract

Let $T_{\infty}(F)$ denote the ring of $\mathbf{N} \times \mathbf{N}$ upper triangular matrices over a field F . It is well known that a matrix $A \in T_{\infty}(F)$ is a left zero divisor iff A contains at least one zero on the main diagonal. However, the case of the right zero divisors is far more complicated. In 1950. (see [1]) Suškevič posed the following problem: Describe all right zero divisors in the ring of infinite upper triangular matrices over a field. Although there were some partial solutions, this problem remained unsolved. We will solve this problem for a special type of infinite upper bidiagonal matrices.

A bidiagonal matrix has only two non-zero diagonals. The matrix is called upper bidiagonal if these are the main diagonal and the principal subdiagonal. In this paper we will describe when infinite upper bidiagonal matrices are right zero divisors in $T_{\infty}(F)$.

Keywords: Zero divisors, Infinite upper triangular matrices

References

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