A new characterization of Suškevič's problem on right zero divisors

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Abstract. In [3] (1950) Suškevič posed the following problem:

Describe all right zero divisors in the ring of infinite upper triangular matrices over a field.

It turns out that the description of right zero divisors in that ring is a very difficult problem that has not been resolved yet. There are some partial answers to this question and one nice reformulation of this problem can be found in [1].

In [2] the authors have proved that every infinite upper triangular matrix over an arbitrary field has a generalized infinite Jordan normal form. Based on this fact, we will prove the following characterization: An infinite upper triangular matrix over a field is a right zero divisor if and only if its generalized Jordan normal form contains a zero row.

Keywords: Zero divisors; Infinite upper triangular matrices; Generalized Jordan normal form.

References

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