

Nil-clean matrices

Simion Breaz

Department of Mathematics, Babeş-Bolyai University

bodo@math.ubbcluj.ro

The class of nil-clean rings was introduced by Diesl, [?], as a particular subclass of the class of clean rings. An element of a ring is *nil-clean* if it is a sum of an idempotent and a nilpotent, and a ring is called nil-clean if all its elements are nil-clean. In this talk we will present, following the main results from [?], a characterization for nil-clean companion matrices as elements in matrix rings over fields. In particular we prove that all matrices with big enough minimal polynomial are nil-clean, and we obtain an answer to a question formulated in [?]: all matrix rings over commutative nil-clean rings are nil-clean, [?].

References

- [1] S. Breaz, G. Călugăreanu, P. Danchev and T. Micu, *Nil-clean matrix rings*, Linear Algebra Appl. **439** (2013), 3115–3119.
- [2] S. Breaz, G. C. Miodo, *Nil-clean companion matrices*, Linear Algebra Appl. **489** (2016), 50–60.
- [3] A.J. Diesl, *Nil clean rings*, J. Algebra **383** (2013), 197–211.