

STRONGLY RELATIVE REGULAR MODULES
AND EXCELLENT EXTENSIONS OF RINGS

GABRIELA OLTEANU

Abstract. We study the transfer of some strong relative regularity of modules under excellent extensions of rings. In particular, we show that if S is an excellent extension of a ring R , then R is strongly regular if and only if so is S .

MSC 2010. 16E50, 16D90.

Key words. Strongly regular module, strongly regular ring, excellent extension of rings.

REFERENCES

- [1] ARENS, R.F. and KAPLANSKY, I., *Topological representations of algebras*, Trans. Amer. Math. Soc., **63** (1948), 457–481.
- [2] CRIVEI, S. and KÖR, A., *Rickart and dual Rickart objects in abelian categories*, Appl. Categor. Struct., **24** (2016), 797–824.
- [3] CRIVEI, S. and OLTEANU, G., *Strongly Rickart objects in abelian categories. Applications to strongly regular and strongly Baer objects*, preprint, 2017.
- [4] DĂSCĂLESCU, S., NĂSTĂSESCU, C. and TUDORACHE, A., *A note on regular objects in Grothendieck categories*, Arab. J. Sci. Eng., **36** (2011), 957–962.
- [5] DĂSCĂLESCU, S., NĂSTĂSESCU, C., TUDORACHE, A. and DĂUȘ, L., *Relative regular objects in categories*, Appl. Categ. Struct., **14** (2006), 567–577.
- [6] DĂUȘ, *Relative regular modules. Applications to von Neumann regular rings*, Appl. Categ. Struct., **19** (2011), 859–863.
- [7] KASCH, F. and MADER, A., *Regularity and substructures of Hom*, Comm. Algebra, **34** (2006), 1459–1478.
- [8] LEE, G., RIZVI, S.T. and ROMAN, C., *Modules whose endomorphism rings are von Neumann regular*, Comm. Algebra, **41** (2013), 4066–4088.
- [9] NICHOLSON, W.K. and ZHOU, Y., *Semiregular morphisms*, Comm. Algebra, **34** (2006), 219–233.
- [10] PARMENTER, M.M. and STEWART, P.N., *Excellent extensions of rings*, Comm. Algebra, **16** (1988), 703–713.
- [11] PASSMAN, D.S., *The Algebraic Structure of Group Rings*, Wiley Interscience, New York, 1977.
- [12] STENSTRÖM, B., *Rings of Quotients*, Grundlehren der Math., **217**, Springer, Berlin, Heidelberg, New York, 1975.
- [13] VON NEUMANN, J., *On regular rings*, Proc. Natl. Acad. Sci. USA, **22** (1936), 707–712.
- [14] ZELMANOWITZ, J., *Regular modules*, Trans. Amer. Math. Soc., **163** (1972), 341–355.

Received July 27, 2017

Accepted September 7, 2017

Babeș-Bolyai University

Department of Statistics-Forecasts-Mathematics

58-60 T. Mihali St.

400591 Cluj-Napoca, Romania

E-mail: gabriela.olteanu@econ.ubbcluj.ro