

ON FI-RETRACTABLE MODULES

MARZIYEH ATASHKAR and YAHYA TALEBI

Abstract. In this paper, we introduce the notion of FI-retractable modules which is a generalization of retractable modules. A module is called FI-retractable if for every nonzero fully invariant submodule N of M , $\text{Hom}(M, N) \neq 0$. In this article, we continue the study of FI-retractable modules. Amongst other structural properties, we also deal direct sums and direct summands of FI-retractable modules. The last section of the paper is devoted to study of $\text{End}(M)$, such that M is FI-retractable.

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Key words. Retractable module, FI-retractable module, fully invariant submodule.

REFERENCES

- [1] F.W. Anderson and K.R. Fuller, *Rings and Categories of Modules*, Springer-Verlog, New York, 1992.
- [2] K.R. Goodearl, *Ring Theory: Nonsingular Rings and Modules*, Marcel Dekker, New York, 1976.
- [3] C. Faith, *Algebra: Rings, Modules and Categories I*, Springer-Verlog Berlin Heidelberg, New York, 1973.
- [4] A. Haghany and M.R. Vedadi, *Endoprime modules*, Acta Math. Hungar., **106** (2005), 89–99.
- [5] A. Haghany and M.R. Vedadi, *Study of semi-projective retractable modules*, Algebra Colloq., **14** (2007), 489–496.
- [6] S.M. Khuri, *Endomorphism rings and lattice isomorphism*, J. Algebra, **56** (1979), 401–408.
- [7] S.M. Khuri, *Endomorphism rings of nonsingular modules*, Ann. Math. Qué., **4** (1980), 63–71.
- [8] S.M. Khuri, *Nonsingular retractable modules and their endomorphism rings*, Bull. Aust. Math. Soc., **43** (1991), 63–71.
- [9] S.M. Khuri, *The endomorphism rings and lattice isomorphisms*, East-Weast J. Math., **2** (2000), 161–170.
- [10] T.Y. Lam, *A First Course in Noncommutative Rings*, Graduate Texts in Mathematics, Vol. **131**, Springer-Verlag, 1991.
- [11] T.Y. Lam, *Lectures on Modules and Rings*, Graduate Texts in Mathematics, Vol. **189**, Springer-Verlog, New York, 1999.
- [12] A.C. Ozcan and A. Harmanci, *Duo modules*, Glasg. Math. J., **48** (2006), 533–545.

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- [13] M.R. Vedadi, *Essentially retractable modules*, Journal of Science, Islamic Republic of Iran, **18** (2009), 37–45.
- [14] R. Wisbauer, *Foundations of Module and Ring Theory*, Gordon and Breach, 1991.
- [15] R. Wisbauer, *Modules and Algebras: Bimodule Structure and Group Action on Algebras*, Pitman Monographs, Vol. 81, Addison-Weseley-Longman, 1996.
- [16] Z. Zhengping, *A lattice isomorphism theorem for nonsingular retractable modules*, Canad. Math. Bull., **37** (1994), 140–144.

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*University of Mazandaran
Department of Mathematics
Iran, Babolsar*

E-mail: m_atashkar62@yahoo.com

<https://orcid.org/0000-0002-7213-9816>

E-mail: talebi@umz.ac.ir

<https://orcid.org/0000-0003-2311-4628>