MR2337762 (2008i:13002) 13A15 (13B99)

D'Anna, Marco (I-CATN-MI); **Fontana, Marco** (I-ROME3)

An amalgamated duplication of a ring along an ideal: the basic properties. (English summary)

J. Algebra Appl. **6** (2007), *no. 3,* 443–459.

In this article the authors introduce a new ring construction, built out of a ring R and an R-module E, called the amalgamated duplication of R along E. Section 2 discusses the main properties of the amalgamated duplication in relation to pullback-type constructions. Section 3 considers the case where E is an ideal of R, and pays special attention to ideal theoretic properties and topological structure of prime ideals of the amalgamated duplication in this particular case.

Reviewed by *Sarah Glaz*

References

1. M. D'Anna, A construction of Gorenstein rings, *J. Algebra* **306** (2006) 509–519. MR2271349 (2007j:13024)
2. M. D'Anna and M. Fontana, The amalgamated duplication of a ring along a multiplicative-canonical ideal, *Ark. Mat.* (to appear) cf. MR 2008g:13003
3. D. Ferrand and J.-P. Olivier, Homomorphismes mimimaux d'anneaux, *J. Algebra* **16** (1970) 461–471. MR0271079 (42 #5962)
4. M. Fontana, Topologically defined classes of commutative rings, *Ann. Mat. Pura Appl. (4)* **123** (1980) 331–355. MR0581935 (81j:13001)
5. R. Fossum, Commutative extensions by canonical modules are Gorenstein rings, *Proc. Amer. Math. Soc.* **40** (1973) 395–400. MR0318139 (47 #6688)
6. R. Fossum, P. Griffith and I. Reiten, *Trivial extensions of Abelian categories. Homological algebra of trivial extensions of Abelian categories with applications to ring theory*, Lecture Notes in Mathematics, Vol. 456 (Springer-Verlag, Berlin, 1975). MR0389981 (52 #10810)
7. S. Gabelli and E.G. Houston, Ideal theory in pullbacks, in *Non-Noetherian Commutative Ring Theory*, eds. S.T. Chapman and S. Glaz (Kluwer Academic Publishers, 2000), pp. 199–227. MR1858163 (2003a:13001)
8. R. Gilmer, *Multiplicative Ideal Theory* (M. Dekker, New York, 1972). MR0427289 (55 #323)
9. S. Glaz, *Commutative Coherent Rings*, Lecture Notes in Mathematics, Vol. 1321 (Springer-Verlag, Berlin, 1989). MR0999133 (90f:13001)
10. W. Heinzer, J. Huckaba and I. Papick, m-Canonical ideals in integral domains, *Comm. Algebra* **26** (1998) 3021–3043. MR1635902 (99h:13024)
11. J. Huckaba, *Commutative Rings with Zero Divisors* (M. Dekker, New York, 1988). MR0938741 (89e:13001)
12. I. Kaplansky, *Commutative Rings* (Allyn and Bacon, Boston, 1970). MR0254021 (40 #7234)
13. J. Lambek, *Lectures on Rings and Modules* (Blaisdell Publishing Company, Waltham, 1966).

MR0419493 (54 #7514)

14. H. Matsumura, *Commutative Ring Theory* (Cambridge University Press, Cambridge, 1986). MR0879273 (88h:13001)

15. M. Nagata, *The theory of multiplicity in general local rings*, in Proc. Intern. Symp. Tokyo-Nikko, 1955 (Sci. Council of Japan, Tokyo 1956), pp. 191–226. MR0082966 (18,637b)

16. M. Nagata, *Local Rings* (Interscience, New York, 1962). MR0155856 (27 #5790)

17. I. Reiten, The converse of a theorem of Sharp on Gorenstein modules, *Proc. Amer. Math. Soc.* **32** (1972) 417–420. MR0296067 (45 #5128)

18. C. Traverso, Seminormality and Picard group, *Ann. Sc. Norm. Super Pisacl. Sci. (5)* **24** (1970) 585–595. MR0277542 (43 #3275)

Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.