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DeMeyer, Frank; **Kakakhail, Haniya**

Generalized equivalence of matrices over normal domains. (English) Zbl 0806.16030

Commun. Algebra 22, No. 3, 897-904 (1994).

The homotopy classes of homomorphisms of R (a commutative ring) form a commutative monoid $M(R)$ with 0 with product. Let $M(R)^*$ denote the non-zero elements of $M(R)$. Let R denote a noetherian integrally closed domain, let $X_1(R)$ be the set of height 1 primes of R. For each $P \in X_1(R)$ the localization R_P is a discrete valuation ring.

In this article the authors examine the natural map $\phi : M(R)^* \to \bigoplus_{P \in X_1(R)} M(R_P)^*$. They show ϕ is an epimorphism. They determine the congruence on $M(R)^*$ induced by ϕ. As a result the authors show ϕ is an isomorphism if and only if R is a Dedekind domain. They provide a unique representing matrix for each homotopy class over a Dedekind domain. These last two results improve and simplify those in Section 2 of *F. R. DeMeyer* and *T. J. Ford* [J. Algebra 113, 379-398 (1988; Zbl 0654.13016)].

Reviewer: Y.Kuo (Knoxville)

MSC:

16S50 Endomorphism rings; matrix rings
13F05 Dedekind, Prüfer, Krull and Mori rings and their generalizations
20M20 Semigroups of transformations, relations, partitions, etc.
13B10 Morphisms of commutative rings
20M14 Commutative semigroups
15A69 Multilinear algebra, tensor calculus

Keywords:

homotopy classes of homomorphisms; commutative monoid; noetherian integrally closed domain; height 1 primes; epimorphism; congruence; Dedekind domain

Full Text: DOI

References:

[1] Bourbaki N., Commutative Algebra (1972)
[2] DOI: 10.1016/0021-8693(88)90167-6 · Zbl 0654.13016 · doi:10.1016/0021-8693(88)90167-6
[3] DOI: 10.1155/S0161171291000881 · Zbl 0749.13011 · doi:10.1155/S0161171291000881
[4] DOI: 10.1080/00927878808823582 · Zbl 0638.13008 · doi:10.1080/00927878808823582
[5] DOI: 10.1007/BF01279308 · Zbl 0211.36903 · doi:10.1007/BF01279308

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