

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 $\phi : M(R)^* \rightarrow \bigoplus_{P \in X_1(R)} M(R_P)^*$. 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](#)
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- [5] DOI: [10.1007/BF01279308](#) · [Zbl 0211.36903](#) · doi:[10.1007/BF01279308](#)

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