998-16-159   **Gene D Abrams*** (`abrams@math.uccs.edu`), Department of Mathematics, University of Colorado, Colorado Springs, CO 80933-7150, and **Frank W Anderson** (`anderson@math.uoregon.edu`), Department of Mathematics, University of Oregon, Eugene, OR 97403. *Perfect rings with enough idempotents.*Preliminary report.

A left perfect ring R is a ring for which every M in $RMod$ (the category of left R-modules) has a projective cover. Bass gave several equivalent conditions for a unital ring R to be left perfect. (One such condition includes the stipulation that R cannot contain an infinite set of orthogonal idempotents.) The notion of projective covers extends verbatim to much more general categories, including categories of (appropriately unitary) modules over non-unital rings. It is easy to show that the ring $R = FM(k)$ consisting of those $\mathbf{N} \times \mathbf{N}$ matrices over a field k having at most finitely many nonzero entries is nonunital and left perfect (i.e. every M in $RMod$ has a projective cover). However, R obviously contains an infinite set of orthogonal idempotents. Thus Bass' result for unital rings does not apply to this more general setting. We give an extension of Bass' results to rings with enough idempotents (a class of rings which includes both unital rings as well as the ring $FM(k)$). We then show how this extension might be useful in an analysis of unital left-perfect group-graded rings. (Received February 24, 2004)

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