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**William P Wardlaw\*** ([wpw@usna.edu](mailto:wpw@usna.edu)), U. S. Naval Academy, Mathematics Department, 572-C Holloway Road, Annapolis, MD 21402. *What is the Rank of a Matrix over a Commutative Ring?* Preliminary report.

In an earlier publication, the author defined the spanning rank of an  $m \times n$  matrix  $A$  over a commutative ring  $R$  to be the smallest positive integer  $r$  such that there is an  $m \times r$  matrix  $C$  and an  $r \times n$  matrix  $D$ , both over  $R$ , such that  $A = CD$ . This rank is discussed, and then compared with several other definitions of ranks, all of which give the standard value of rank when  $R$  is a field, but which can give different values when  $R$  is not a field. Some applications of the different rank definitions are mentioned. (Received September 14, 2000)