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David S. Torain, II* (david.torain@hamptonu.edu). *Structure Theorems for Commutative Noetherian Moore-Penrose Two (MP2) Rings and Elementary Divisor Rings.*

This paper puts forth some original structure theorems for commutative and Noetherian (Moore-Penrose Two) rings as well as unit MP2 rings. An arbitrary ring R will be called MP2 as follows: Given any nonzero element a in R , there exists a nonzero x in R such that $xax = x$. Also, an arbitrary ring R will be called MP1 (Moore-Penrose One) if it satisfies the following property: Given any nonzero element a in R , there exists a nonzero x in R such that $xax = x$. Interestingly enough, MP2 rings appear frequently in atmospheric science isothermal curve estimating problems, and in engineering applications for solving unstable linear systems, or in business demand-supply matrix models with ill-conditioned Leontief matrices. (Received September 01, 2014)