Feroz Siddique* (fsiddiq2@slu.edu), Department of Mathematics and Computer Sc., 220 N. Grand Blvd, Saint Louis, MO 63103, and Ashish K Srivastava (asrivas3@slu.edu), Department of Mathematics and Computer Sc., 220 N. Grand Blvd, Saint Louis, MO 63103.

Decomposing Elements of a Right Self Injective Ring.

It was proved independently by both Wolfson [An ideal theoretic characterization of the ring of all linear transformations, Amer. J. Math. 75 (1953), 358-386] and Zelinsky [Every Linear Transformation is Sum of Nonsingular Ones, Proc. Amer. Math. Soc. 5 (1954), 627-630] that every linear transformation of a vector space $V$ over a division ring $D$ is the sum of two invertible linear transformations except when $V$ is one-dimensional over $\mathbb{Z}_2$. This was extended by Khurana and Srivastava [Right self-injective rings in which each element is sum of two units, J. Algebra and its Appl., Vol. 6, No. 2 (2007), 281-286] who proved that every element of a right self-injective ring $R$ is the sum of two units if and only if $R$ has no factor ring isomorphic to $\mathbb{Z}_2$. In this paper we prove that if $R$ is a right self-injective ring, then for each element $a \in R$ there exists a unit $u \in R$ such that both $a + u$ and $a - u$ are units if and only if $R$ has no factor ring isomorphic to $\mathbb{Z}_2$ or $\mathbb{Z}_3$. (Received September 25, 2012)