S- ELEMENTS IN NON-ASSOCIATIVE RINGS

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In this paper we introduce the notion of S-zero divisors, S-units, S-nilpotents, S-idempotents, S-normal elements, S-semi idempotents, S-quasi regular elements in a non-associative ring which we take mainly as a loop ring. We prove let \( Z_p = \{0, 1, \ldots, p - 1\} \) be the prime field of characteristic \( p \) (\( p > 2 \)), \( L_n(m) \) be the loop where we choose \( n = p \). Then

\[
\alpha = 1 + g_1 + \ldots + g_n
\]

and

\[
\beta = \left( \frac{p+1}{2} + \frac{p+1}{2} g_i \right),
\]

\( g_i \in L_p(m) \) are S-idempotents of the loop ring \( Z_pL_p(m) \) for any loop \( L_p(m) \in L_p \). Let \( Z_2 = \{0, 1\} \) be the prime field of characteristic two and \( L_n(m) \in L_n \) be the class of loops. Then all elements of the form \( x = 1 + g_i \in Z_2L_n(m) \) where \( g_i \in L_n(m) \) are S-pseudo zero divisors of \( Z_2L_n(m) \).