ON LOOP RINGS OF A SPECIAL CLASS OF LOOPS

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This paper studies the class of loop rings, which are defined analogous to group rings. Here we use only the special class of loops called Moufang loops. A loop $L$ is said to be a Moufang loop if it satisfies the Moufang identity viz. $(xy)(zx) = x((yz)x)$ for all $x, y, z \in L$. Here we assume the rings over which the loop rings are defined to be either a commutative ring with unit or a field. We prove in a loop ring for every Moufang loop over a ring or a field has a subset, which is a group algebra. Further we show the loop ring of a Moufang loop contains a semiprime associative subring and $L$ contains a subset $\Delta (P)$ which has no elements of order $p$. For $P \subset L$, $P$ a subgroup of $L$; $P$ has no finite normal subgroup with order divisible by $p$. We know from Tim Hsu (1996) if $L$ is a Moufang loop then $L$ is diassociative, so the loop ring of Moufang loops yield non-trivial zero divisors and idempotents. Finally we establish the loop ring of a Moufang loop has a nontrivial subset which is a prime ring.