

## ON A PROPERTY OF THE IDEALS OF THE POLYNOMIAL RING $R[x]$

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**ABSTRACT.** Let  $R$  be a commutative ring with unity  $1 \neq 0$ . In this paper we introduce the definition of the first derivative property on the ideals of the polynomial ring  $R[x]$ . In particular, when  $R$  is a finite local ring with principal maximal ideal  $\mathfrak{m} \neq \{0\}$  of index of nilpotency  $e$ , where  $1 < e \leq |R/\mathfrak{m}| + 1$ , we show that the null ideal consisting of polynomials inducing the zero function on  $R$  satisfies this property. As an application, when  $R$  is a finite local ring with null ideal satisfying this property, we prove that the stabilizer group of  $R$  in the group of polynomial permutations on the ring  $R[x]/(x^2)$ , is isomorphic to a certain factor group of the null ideal.

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