α-Skew π-Armendariz Rings

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***Abstract*—In this article we introduce a new concept called α-skew π-Armendariz rings (α-Sπ-AR) as a generalization of the notion ofα-skew Armendariz rings. Another important goal behind studying this class of rings is to employ it in order to design a modern algorithm of an identification scheme according to the evolution of using modern algebra in the applications of the field of cryptography.We investigate general properties of this concept and give examples for illustration. Furthermore, this paperstudy the relationship between this concept and some previous notions related to α-skew Armendariz rings. It clearly presents that every weak α-skew Armendariz ring is α-skew π-Armendariz (α-Sπ-AR). Also, this article shows that the concepts ofα-skew Armendariz rings and α-skew π- Armendariz rings are equivalent in case R is 2-primal and semiprime ring.Moreover, this paper proves for a semi commutativeα-compatible ringR that if $R[x;\alpha]$ is nil-Armendariz, thenR is an α-Sπ-AR. In addition, if R is an α-Sπ-AR, 2-primal and semi prime ring, then $N(R[x;\alpha]) = N(R)[x;\alpha]$. Finally, we look forward that α-skew π-Armendariz rings (α-Sπ-AR)be more effect (due to their properties) in the field of cryptography than π-Armendariz rings, weak Armendariz rings and others.For these properties and characterizations of the introduced concept α-Sπ-AR, we aspire to design a novel algorithm of an identification scheme.**

***Keywords*— α-skew π-Armendariz rings, α-skew Armendariz rings, 2-primel rings, semiprime rings, (α, δ)- compatible rings.**

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