

Voskoglou, Michael G.

A note on skew polynomial rings. (English) Zbl 0830.16019
Publ. Inst. Math., Nouv. Sér. 55(69), 23-28 (1994).

The author considers the simplicity of a skew polynomial ring $S_n = R[x_1, \dots, x_n; d_1, \dots, d_n]$ where R is a ring of prime characteristic p and d_1, \dots, d_n are commuting derivations of R . He establishes a sufficient condition, involving the derivations of the intermediate rings S_{i-1} of the form $\sum_{k=0}^m c_k d_i^{p^k}$, where each $c_k \in \bigcap_{j=k}^n \ker(d_j)$, for the simplicity of S_n and proves the necessity of a weaker condition. As the author points out, *D. R. Malm* [Pac. J. Math 132, 85-112 (1988; [Zbl 0608.16005](#))] has given a necessary and sufficient condition, in terms of the derivations of R of the form $\sum_{i=1}^n \sum_{k=0}^m c_{ik} d_i^{p^k}$, where each $c_{ik} \in \bigcap_{j=1}^n \ker(d_j)$ and is central in R , for the simplicity of S_n .

Reviewer: [D.A.Jordan \(Sheffield\)](#)

MSC:

- [16S36](#) Ordinary and skew polynomial rings and semigroup rings
- [16D25](#) Ideals in associative algebras
- [16W25](#) Derivations, actions of Lie algebras
- [16D60](#) Simple and semisimple modules, primitive rings and ideals in associative algebras

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Keywords:

[skew polynomial ring](#); [commuting derivations](#); [intermediate rings](#); [simplicity](#)

Full Text: [EMIS](#) [EuDML](#)