

Lech, Christer

A note on recurring series. (English) Zbl 0051.27801
Ark. Mat. 2, 417-421 (1953).

The author generalizes a result by *Th. Skolem* [8. Skand. Mat.-Kongr., 163–188 (1935; [Zbl 0011.39201](#))] and *K. Mahler* [*Mathematica*, Leiden 3, 153–156 (1934; [Zbl 0010.39005](#))], and proves the following theorem:

In a field of characteristic 0, let c_ν ($\nu = 0, 1, 2, \dots$) satisfy the recursive formula

$$c_\nu = \alpha_1 c_{\nu-1} + \alpha_2 c_{\nu-2} + \dots + \alpha_n c_{\nu-n} \quad (\nu = n + 1, n + 2, \dots).$$

If $c_\nu = 0$ for infinitely many ν , then these vanishing c_ν occur periodically in the sequence from a certain ν onwards.

The proof is similar to that of Mahler. The main difficulty arises in the case when the field generated by all c_ν is transcendental over the rational field.

Reviewer: [K. Mahler](#)

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MSC:

[11B37](#) Recurrences

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References:

- [1] K. Hensel, *Theorie der algebraischen Zahlen I*, Leipzig und Berlin, 1908.
- [2] K. Mahler, Eine arithmetische Eigenschaft der Taylor-koeffizienten rationaler Funktionen, *Akad. Wetensch. Amsterdam, Proc.* 38, 50–60 (1935). · [Zbl 61.0176.02](#)
- [3] Th. Skolem, Einige Sätze über gewisse Reihenentwicklungen und exponentiale Beziehungen mit Anwendung auf diophantische Gleichungen. *Oslo Vid. akad. Skrifter I* 1933 Nr. 6.
- [4] Th. Skolem, Ein Verfahren zur Behandlung gewisser exponentialer Gleichungen und diophantischer Gleichungen, *C. r. 8 congr. scand. à Stockholm* 1934, 163–188. · [Zbl 61.1080.01](#)

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