

The Analogue of a Property of Pisot Numbers in Fields of Formal Power Series

Authors : Wiem Gadri

Abstract : This study delves into the intriguing properties of Pisot and Salem numbers within the framework of formal Laurent series over finite fields, a domain where these numbers' spectral characteristics, $\Lambda_m(\beta)$ and $\text{lm}(\beta)$, have yet to be fully explored. Utilizing a methodological approach that combines algebraic number theory with the analysis of power series, we extend the foundational work of Erdos, Joo, and Komornik to this new setting. Our research uncovers bounds for $\text{lm}(\beta)$, revealing how these depend on the degree of the minimal polynomial of β and thus offering a novel characterization of Pisot and Salem formal power series. The findings significantly contribute to our understanding of these numbers, highlighting their distribution and properties in the context of formal power series. This investigation not only bridges number theory with formal power series analysis but also sets the stage for further interdisciplinary research in these areas.

Keywords : Pisot numbers, Salem numbers, formal power series, over a finite field

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