Interpolation

The main reference of this section is [Poo14]. We first state the main theorem of this section.

Theorem 1. Let $\mathbf{k}$ be a complete non-archimedean field of characteristic 0 with $\mathrm{char}\,\mathbf{k}_{\mathbf{k}} = p$ and $|p|_{\mathbf{k}} = 1/p$. Suppose that $f \in \mathbf{k}\{\underline{T}\}^d$ satisfies $\|f(\underline{T}) - \underline{T}\| \leq r_p$. Then there exists a function $g \in \mathbf{k}\{\underline{T}, n\}$ such that for each $n \in \mathbb{Z}_{\geq 0}$ and each $\underline{t} \in \mathbf{k}^d$,

$$g(\underline{t}, n) = f^n(\underline{t}).$$

Yang: To be checked.

References

[Poo14] Bjorn Poonen. "p-adic interpolation of iterates". In: *Bulletin of the London Mathematical Society* 46.3 (2014), pp. 525–527 (cit. on p. 1).