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Title: Multivariable versions Kaluza's Lemma.

Abstract: Let $d \in \mathbb{N}$ and $f(z) = \sum_{\alpha \in \mathbb{N}_0^d} c_\alpha z^\alpha$ be a convergent multivariable power series in $z = (z_1, \dots, z_d)$. We present two independent conditions on the positive coefficients c_α which imply that $f(z) = \frac{1}{1-\sum_{\alpha \in \mathbb{N}_0^d} q_\alpha z^\alpha}$ for non-negative coefficients q_α. It turns out that functions of the type

$$f(z) = \int_{[0,1]^d} \frac{1}{1 - \sum_{j=1}^d t_j z_j} d\mu(t)$$

satisfy one of our conditions, whenever $d\mu(t) = d\mu_1(t_1) \times \cdots \times d\mu_d(t_d)$ is a product of probability measures μ_j on $[0, 1]$. The results have applications in the theory of Nevanlinna-Pick kernels.

The motivations for both conditions are similar. Yet, the calculation for the second condition is using non-commutative function theory. This is joint work with Jesse Sautel.