The detailed wedge-of-the-edge theorem
based on unpublished paper by J.E. Pascoe

Aim of the talk is to prove the following theorem:

Theorem 1 (The detailed wedge-of-the-edge theorem)**.** *Let* $f : \Pi^d \cup (-1, \varepsilon)^d \cup (-\varepsilon, 1)^d \to \overline{\Pi}$ *(for fixed* $\varepsilon > 0$*) be:*

- *continuous on* $\Pi^d \cup (-1, \varepsilon)^d \cup (-\varepsilon, 1)^d$,
- *holomorphic on* Π^d,
- *real-valued on* $(-1, \varepsilon)^d \cup (-\varepsilon, 1)^d$.

Then for any $h \in \mathbb{C}^d$

$$\left| \frac{f^{(n)}(0)(h)}{n!} \right| \leq 6 \cdot 60^n \|h\|_\infty^n |f'(0)(1)|.$$

Proof of this theorem is based on two lemmas.

Lemma 2. *Let* $p(z)$ *be a homogeneous polynomial of degree* n *in* d *variables such that for any* $z \in [0, 1]^d$ $|p(z)| \leq 1$*. Then for any* $z \in \mathbb{C}^d$

$$|p(z)| \leq (3\sqrt{2})^n \|z\|_\infty^n \frac{3^{9/4}}{64} \left((1 + \sqrt{2})^{n+1} + (1 - \sqrt{2})^{n+1} \right)^3 .$$

Lemma 3. *Let* $f : \Pi^d \cup (-1, \varepsilon)^d \cup (-\varepsilon, 1)^d \to \overline{\Pi}$ *be as in Theorem 1. Then for any* $h \in [0, 1]^d$

$$\left| \frac{f^{(n)}(0)(h)}{n!} \right| \leq |f'(0)(1)|.$$