Weak triangle inequality for the Lempert function

Nikolai Nikolov
(*Bulgarian Academy of Science, Sofia*)

The (unbounded version of the) Lempert function l_D on a domain $D \subset \mathbb{C}^d$ does not usually satisfy the triangle inequality, even for smooth balanced domains. However, on bounded $\mathcal{C}^2$-smooth strictly pseudoconvex domains, it satisfies a weaker version with a constant: $l_D(a,c) \leq C(l_D(a,b) + l_D(b,c))$. We show that pseudoconvexity is necessary for this property as soon as D has a $\mathcal{C}^1$-smooth boundary. We also give some estimates in some domains which are model for local situations.

Based on a joint work with Pascal J. Thomas.