

SOME REMARKS ON HARTOGS' EXTENSION THEOREM

If $\Delta: = \{z \mid |z| < 1\} \subset \mathbb{C}$ denotes the unit disc, Hartogs' classical extension lemma states that any holomorphic function on a connected neighborhood of the set $\mathcal{H} = (\partial\Delta \times \bar{\Delta}) \cup (\bar{\Delta} \times \{0\})$ extends holomorphically to a neighborhood of the whole bidisc $\bar{\Delta} \times \bar{\Delta}$.

About ten years ago E. M. Čirka showed that this result also holds even if the disc $\bar{\Delta} \times \{0\}$ is replaced by the graph of a merely continuous function $\varphi: \bar{\Delta} \rightarrow \Delta$. An obvious necessary condition for a compact set $K \subset \bar{\Delta} \times \bar{\Delta}$ to have the Hartogs extension property is that its rational hull equals the closed bidisc $\bar{\Delta} \times \bar{\Delta}$ and he then asked whether such compact sets containing the solid torus $\partial\Delta \times \bar{\Delta}$ do enjoy the extension property.

In this talk we will digress around Čirka's question and present some positive/negative results.