

UNIVERSAL FABER SERIES

VAGIA VLACHOU

ABSTRACT. For a certain type of doubly connected domains, we prove that there exist functions, holomorphic on such a domain, such that for any choice of compact set with connected complement in the domain, the corresponding Faber series is universal.

More specifically, if $K \subset \mathbb{C}$ is a compact and connected set with connected complement, containing more than one points and $\Omega = \mathbb{C} \setminus K$, then the class

$\bigcap_{\Gamma \in Y} U(\Omega, \Gamma)$ is residual in $H(\Omega)$, where

$$Y = \{\Gamma \subset \Omega : \Gamma \text{ is compact and connected set, containing more than one points and } \mathbb{C} \setminus \Gamma \text{ is connected.}\}$$

Remark: By $U(\Omega, \Gamma)$, we denote the class of universal Faber series in respect to Γ , that is the corresponding Faber expansion of a function in the class, realizes approximations outside Ω .