VITALI'S THEOREM WITHOUT UNIFORM BOUNDEDNESS

Nguyen Quang Dieu, Phung Van Manh, Pham Hien Bang, and Le Thanh Hung

This work is dedicated to the 75th birthday of Professor Nguyen Van Khue

Abstract: Let $\{f_m\}_{m \geq 1}$ be a sequence of holomorphic functions defined on a bounded domain $D \subset \mathbb{C}^n$ or a sequence of rational functions ($1 \leq \deg r_m \leq m$) defined on $\mathbb{C}^n$. We are interested in finding sufficient conditions to ensure the convergence of $\{f_m\}_{m \geq 1}$ on a large set provided the convergence holds pointwise on a not too small set. This type of result is inspired from a theorem of Vitali which gives a positive answer for uniformly bounded sequence.