JENSEN MEASURE AND BOUNDARY VALUES OF PURISUBHARMONIC FUNCTIONS

FRANK WIKSTROM

$D \subset \mathbb{C}^n$ be a pseudoconvex domain Fornaess and Narasimhan proved in [1] that if $u \in PSH(D)$ then there is a sequence $(u_j)_j \subset PSH(D) \cap C(D)$ that decreases to u in D. Wikstrom proved that there exist a pseudoconvex domain D and $u \in PSH(D)$ so that there is no sequence of continuous plurisubharmonic functions $(u_j)_j \subset PSH(D) \cap C(\overline{D})$ that decreases to u^* on $\overline{D}$.

After studying different classes of Jensen measures for plurisubharmonic functions we will prove that

Theorem 0.1. *If D is a polydisc or a B-regular domain and $u \in PSH(D)$ is upper bounded then there is a sequence of continuous plurisubharmonic functions $(u_j)_j \subset PSH(D) \cap C(\overline{D})$ that decreases to u^* on $\overline{D}$.*

One can remark that the approximation theorem above is slightly connected to the Problem 27.4 posed by Sadulaev in [6].

References

[1] Fornaess and Narasimhan *The Levi Problem on Complex Spaces with Singularities* , Math, Ann 248 (1980) 47-72.

[2] Z. Błocki, *The complex Monge-Ampère operator in pluripotential theory*, Lecture notes, 1998.

[3] M. Klimek, *Pluripotential Theory*, London Math. Soc., Monographs New Series 6, Clarendon Press, Oxford, 1991.

[4] N. Levenberg and E. A. Poletsky, *Pluripolar Hulls*, Michigan Math. J. **46** (1999) 151–162

[5] E. A. Poletsky, *Holomorphic currents*, Indiana Univ. Math. J., **42** (1993), 85–144.

[6] A. Sadullaev, *Plurisubharmonic measures and capacities on complex manifolds*, (Russian) Uspekhi Mat. Nauk **36** (1981), no. 4, 53–105. English translation in *Russian Math. Surveys*, **36** (1981), no. 4, 61-119.

[7] N. Sibony, *Une classe de domaines pseudoconvexes*, Duke Math. J. **55** (1987), 299–319.

[8] F. Wikström, *Jensen measures, duality and pluricomplex Green functions* Thesis, Umeå, 1999

[9] F. Wikström, *Jensen measure and boundary values of plurisubharmonic functions*, Ark. Mat., **39** (2001), 181–200.