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\mathcal{P} -Measure in the Class of m -wsh Functions

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In this work we study the \mathcal{P} -measure and \mathcal{P} -capacity in the class of m -wsh functions and prove a number of their properties.

Keywords: m -wsh function, \mathcal{P} -measure, \mathcal{P} -capacity, mw-regular point.

Introduction

The classical potential theory (see [1, 2]) works with classes of harmonic and subharmonic functions and involves such concepts like the condenser capacity, harmonic measures of the sets, polar sets and others. The pluripotential theory, as is known, deals with the class of psh functions and the Monge-Ampere operator $(dd^c u)^n = 0$ (see [3, 4]), where as usual

$$d = \partial + \bar{\partial}, d^c = \frac{\partial - \bar{\partial}}{4i}.$$

In the recent work [5] the author has studied the class of m -wsh functions, introduced the concept of mw -polarity of sets and proved several of their properties. In this paper we study the \mathcal{P} -measure and \mathcal{P} -capacity in the class of m -wsh functions. In section 1 we briefly give the definition of m -wsh functions and some results, which we use below. In section 2 we give the definition of \mathcal{P} -measure and we prove some of its properties. Section 3 is dedicated to the \mathcal{P} -capacity and its properties.

We note that m -sh and m -wsh functions are related to the Hessians of function u (see [3, 6]). They can be used in different problems of multidimensional complex analysis. One of such application is shown in the work [6] (see also [7, 8]) where the characteristic functions of Nevalinna of higher order are estimated.

1. m -wsh functions

Definition 1. A function $u(z) \in L_{loc}^1(D)$ given in a domain $D \subset \mathbb{C}^n$ is called an m -wsh function (subharmonic function on $(n-m+1)$ -dimensional complex surfaces) in D , $1 \leq m \leq n$, if:

- 1) it is upper semicontinuous in D , i.e.

$$\overline{\lim}_{z \rightarrow z^0} u(z) = \lim_{\varepsilon \rightarrow 0} \sup_{B(z^0, \varepsilon)} u(z) \leq u(z^0);$$

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