

SOME CRITERIA FOR PLURIHARMONICITY**Madrakhimov Ruzimbay Masharipovich**

Toshkent State Pedagogical University, Cand. Sc. (Physics and Mathematics), Associate Professor.

&

Khaknazarova Nilufar Kuronboevna

Head Scientific and Methodological Center under the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan

ABSTRACT

In this article we prove an analogue of Hartogs' Lemma for pluriharmonic functions:

Theorem I. Suppose that the function $U(z, z_n)$ is defined in polydisk ${}^1V \times \{|z_n| < R\} \subset C_{z_n}^{n-1} \times C_{z_n}$, $R > 0$ and satisfies the following conditions:

- 1) For each fixed $z \in {}^1V$ function $U(z, z_n)$ of a complex variable z_n harmonic in the circle $|z_n| < R$
- 2) $U(z, 0)$ is harmonic in 1V on z
- 3) function $U(z, z_n)$ is plurisubharmonic in all variables in some polydisk ${}^1V \times \{|z_n| < r\}$, $R > r > 0$

Then, the function $U(z, z_n)$ is pluriharmonic in polydisk ${}^1V \times \{|z_n| < R\}$

Keywords: Hartogs' Theorem, Lelong's theorem, separately holomorphic functions, separately harmonic functions, holomorphic functions, harmonic functions, plurisubharmonic functions.