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ON THE PROBLEM OF SOLVING THE GENERALIZED MOISIL – TEODORESCU SYSTEM

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The problem of describing the function given on a part of the boundary of a domain which can be analytic continued into the domain has been thoroughly studied. The first result was obtained by V. A. Fock and F. M. Kuni [1] in the one-dimensional case. A generalization of the theorem of Fock – Kuni was obtained in a series of the papers for holomorphic function in several variables [2]. The problem of continuation of function given on a part of the boundary of a domain to this domain as a solution of the Helmholtz equation, a equation theory elasticity, i. e, as harmonic function has been considered in [3–5].

We consider the problem of describing the vector-function given on a part of the boundary of a three dimensional domain can be continued to this domain as a solution of the generalized Moisil – Teodorescu system of equations. Our investigation is based on the analog of the generalized Cauchy integral formula for the generalized Moisil – Teodoresco system and a jimp formula for the limiting values of the generalized Cauchy type integral [6].

Continuation for the solution of the of the generaslized Cauchy – Riemann system equations to the domain by its values on a part of the boundary is based on constructing the Carleman matrix for the generalized Moisil – Teodoresco system equation. The notation of Carleman fiunction was introduced by M. M. Lavrent'ev [7]. By using the continuation formula we found necessary and sufficient for the extendibility of functions given an a part of a boundary to the domain as a solution of the generalized Moisil – Teodoresco system. We prove the Fock – Kuni theorem fore this one.

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