FIRST ORDER ELLIPTIC SYSTEMS ON THE PLANE

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General elliptic systems of first order on the plane were the subject of investigations of many authors. Reducing the system to one complex equation, the theory of solutions of this equation, the theory of generalized analytic functions, was constructed by I.Vekua. By analogy with the theory of generalized analytic functions, representation formulae generalizing Cauchy's Integral Formulae were established. On this basis we solve the boundary value problems with discontinuous matrix coefficients. The necessary and sufficient conditions for the solvability and the index formulae of these problems in the weighted classes are established.

Sufficiently wide classes of special (degenerate in point) differencial equations are studied. Solutions structure in the neighbourhood of exlusiveness are established. The corresponding boundary value problems as well as their complete (in some sense) analysis are given.