ABSTRACT

LINEAR SYSTEM OF THE VOLTERRA INTEGRAL EQUATION WITH A POLAR KERNEL

Maide ŞEN

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Supervisor: Assist. Prof. Dr. Ali IŞIK
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In this study,

$$\bar{v}(t) = \bar{f}(t) + \int_0^t \frac{t}{\sqrt{t^2 - \tau^2}} K(t,\tau)\bar{v}(\tau)d\tau,$$

$$\bar{v}(t) = (v_1(t), v_2(t), \cdots, v_n(t)),$$

$$\bar{f}(t) = (f_1(t), f_2(t), \cdots, f_n(t)), \quad f_m(t) \in C[0,T],$$

$$K(t,\tau) = \left(K_{ij}(t,\tau)\right)_{n\times n}, \qquad K_{ij}(t,\tau) \in C(0 \le \tau \le t \le T),$$

$$i,j = 1,2,\cdots,n$$

are considered integral equation with a polar kernel. Initial value problems for hyperbolic equations with function coefficients provides integral equation with 3-D Volterra type. Existence and uniqueness theorems of the volterra integral equation a polar kernel are proved. Method of successive approximation used in solutions of singular integral equations, existence and uniqueness theorems are emphasied.

Key words : system of integral equations, a polar kernel, Weierstrass theoerms.