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Mixed Type of Integral Equation with Potential Kernel

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Abstract: This paper presents the solution of an integral equation of a mixed type in three-dimensions in the space $L_2(\Omega) \times C[0,T]$, where $T < \infty$, and Ω is the domain of integration with respect to position. The kernel of position integral term is considered in the potential function form, while the kernel of time is considered as a continuous kernel. A linear system of Fredholm integral equations of the first and second kinds are obtained and solved. Krein's method is used to solve the Fredholm integral equation of the first kind, while the second kind is solved numerically.

Key Words: Fredholm integral equations; Potential kernel; Legendre and Jacobi polynomials; Weber-Sonien integral