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RANDOM FREDHOLM INTEGRAL EQUATIONS OF THE SECOND KIND WITH DEGENERATE KERNELS II. BOUNDS FOR PROBABILITIES

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ABSTRACT. In Part I of this series of papers [**10**] general limit theorems were proved for the distribution of the solution of random Fredholm integral equations with degenerate kernels. In this paper we consider bounds and estimates for corresponding probabilities and give some examples to illustrate the obtained results.

1. Introduction. In Part I of this series of papers we considered a sequence of random integral equations

$$\int_0^1 K_n(t,s,\omega)x_n(s,\omega)ds - \tilde{\lambda}_n x_n(t,\omega) = b_n(t,\omega),$$

$$(E_n) \qquad \tilde{\lambda}_n \neq 0, \quad n = 1,2,\ldots$$

with random degenerate kernels

$$(S_n) \qquad K_n(t,s,\omega) = \sum_{i=1}^{n} \alpha_{in}(t,\omega)\beta_{in}(s,\omega).$$

For the further statements we will use the notation of Part I. In particular, for simplification we also omit the variable ω. Under appropriate conditions the limit distribution of the sequence $\{x_n(t)\}$ was determined in [**10**]. For this end we have used a sequence of approximating processes $w_n(t)$ whose limit distribution can be easily calculated.

Of course, in this connection one must investigate the accuracy of the approximation or, at least, estimates for it. In this direction we will consider two problems for which we will derive explicit bounds. First, we will give bounds (estimates) for probabilities of the form

$$(\mathrm{P}_1) \qquad \mathrm{P}(x_n(t_0) \in G_0), \quad G_0 \ - \ \text{suitable subset of } \mathbf{R}^1,$$