

## On the summability by Riesz methods of series with respect to block-orthonormal systems

*Givi Nadibaidze*

[givi.nadibaidze@tsu.ge](mailto:givi.nadibaidze@tsu.ge)

Department of Mathematics, Iv. Javakishvili Tbilisi State University, University str. 13

Below some questions connected with the problems of almost everywhere summability by Riesz methods of series with respect to block-orthonormal systems are considered.

Let  $\{N_k\}$  be increasing sequences of natural numbers and

$$\Delta_k = (N_k, N_{k+1}], \quad (k \geq 1).$$

Let  $\{\varphi_n\}$  be a system of functions from  $L^2(0,1)$ . The system  $\{\varphi_n\}$  will be called a  $\Delta_k$ -orthonormal system if  $\|\varphi_n\|_2 = 1$ ,  $n = 1, 2, \dots$  and  $(\varphi_i, \varphi_j) = 0$ , for  $(i, j) \in \Delta_k$ ,  $i \neq j$ ,  $(k \geq 1)$ .

Let  $\{\lambda_n\}$  be increasing sequences of positive numbers,  $\lambda_0 = 0$  and  $\lambda_n \rightarrow +\infty$ . The series

$\sum_{n=1}^{\infty} u_n$  is called summable by Riesz  $(R, \lambda_n, 1)$  method to the number  $s$  if

$$\lim_{n \rightarrow \infty} \sum_{k=0}^n \left(1 - \frac{\lambda_k}{\lambda_{n+1}}\right) u_k = s.$$

It is studied the  $(R, \lambda_n, 1)$  summability almost everywhere of series

$$\sum_{n=1}^{\infty} a_n \varphi_n(x)$$

with respect to  $\Delta_k$ -orthonormal system  $\{\varphi_n\}$ . It is established connection between  $(R, \lambda_n, 1)$  summability almost everywhere and almost everywhere convergence of subsequence of partial sums.