ON THE SPECTRUM OF FUNCTION IN THE WEYL SPACE

By

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1. Introduction. Let f be a bounded measurable function defined on the real line. By $\Lambda(f)$ we mean the set of real number λ which satisfies the following property. For any integrable function $K(x)$ the condition

(1.1) $$K*f=\int_{-\infty}^{\infty}K(x-y)f(y)dy=0 \qquad (-\infty<x<\infty)$$

implies

(1.2) $$\int_{-\infty}^{\infty}e^{i\lambda y}K(y)dy=0.$$

(c. f. A. Beurling [1].

In the previous paper we introduced the analogous definitions. By $\Lambda_*(f)$ we mean the set of real number λ which satisfies the following property. For any integrable function $K(x)$ the condition

(1.3) $$K*f=\int_{-\infty}^{\infty}K(x-y)f(y)dy\sim 0$$

implies

(1.4) $$\int_{-\infty}^{\infty}e^{i\lambda y}K(y)dy=0$$

where the notation $K*f\sim 0$ means

(1.5) $$\overline{\lim_{l\to\infty}}\sup_{-\infty<x<\infty}\frac{1}{l}\int_{-\infty}^{\infty}|K*f(x)|^2dx=0.$$

(c. f. S. Koizumi [4]. It is clear that

(1.6) $$\Lambda_*(f)\subseteqq\Lambda(f).$$

The purpose of this paper is to investigate properties of the above defined set as for functions represented by the Fourier-Stieltjes transform and almost periodic functions in the sense of Weyl.

2. General property of $\Lambda_*(f)$.

Theorem 1. *The set $\Lambda_*(f)$ is closed.*

This is a trivial result.