The object of the present study is to investigate the characteristic properties of absolute bases in Orlicz spaces. The investigation borders in its methods and results on [1, 2], in which a similar problem was studied for the spaces \( L_p, 1 < p < \infty \).

Let \( L_M \) be a reflexive Orlicz space on the interval \([0, 1]\) defined by the \( N \)-function \( M(u) \):

\[
M(u) = \int_0^1 p(t) \, dt,
\]

where \( p(0) = 0, \lim_{t \to \infty} p(t) = \infty, p(u) > 0 (u > 0) \) and \( p(t) \) is a nondecreasing function continuous on the right.

As we know, the space \( L_M \) is reflexive if and only if the function \( M(u) \) and its complementary function \( N(u) \) satisfy the \( \Delta_2 \)-condition, i.e.,

\[
M(2u)/M(u) \leq C(u > u_0), \quad N(2u)/N(u) \leq C(u > u_0),
\]

where

\[
N(u) = \int_0^u q(s) \, ds, \quad q(s) = \sup_{p(t) \leq s} t,
\]

Let us recall certain facts from the theory of Orlicz spaces which are used in what follows.

The space \( L_M \) is a Banach space with the norm

\[
\|f\|_M = \sup_{N(u) = 1} \left\{ \int_0^1 f(t) \, dt \right\}.
\]

Two \( N \)-functions \( M_1(u) \) and \( M_2(u) \) are equivalent if

\[
M_1(au) \leq M_2(u) \leq M_1(\beta u)
\]

for \( u \geq u_1 \) and for some \( \alpha, \beta > 0 \). In what follows it will be convenient to use the following notation. If \( A \) is a class of objects, and \( f, g \) are functionals in \( A \) which take real values, then we shall write

\[
f(a) \sim g(a) \quad (a \in A),
\]

If for any \( a \in A \) the following holds:

\[
C_1g(a) \leq f(a) \leq C_2g(a),
\]

where the constants \( C_1 > 0 \) and \( C_2 > 0 \) do not depend on \( a \). If \( M \) is equivalent to \( M_1 \), then the norms \( \|\cdot\|_M \) and \( \|\cdot\|_{M_1} \) are equivalent, i.e.,

\[
\|u\|_M \sim \|u\|_{M_1}, \quad (u \in L_M^*)
\]

(see [3], p. 133). The following inequalities hold:

We shall say that the function $M(u)$ belongs to the class $Z^*(a,b)$ ($M \in Z^*(a,b)$), where $1 < a \leq b < \infty$, if the following relationships are fulfilled:

$$1 < a \leq \frac{u}{M(u)} \leq b < \infty \quad (0 < u < \infty).$$

**Lemma 1.** In any reflexive space $L^*_M$ it is possible to introduce an equivalent norm by means of the function $M_1(u) \in Z^*(a,b)$ (for some $a, b$, $1 < a < b < \infty$).

**Proof.** It is easy to verify that one can find N-functions $M_1(u), N_1(u)$, equivalent to $M(u), N(u)$ respectively, and such that the following conditions are fulfilled:

a) $M_1(u), N_1(u)$ satisfy the $\Delta_{2}^{-}$-condition for $u > 0$;

b) $M_1(u) = \int_0^u p_1(s)ds$, where $p_1(0) = 0, p_1(\infty) = \infty, p_1(s)$ increases monotonically and is continuous.

Using Theorems 4.1 and 4.3 from [3], we find that $M_1(u) \in Z^*(a,b)$ for some $a, b$, $1 < a < b < \infty$.

At the same time $\|u\|_{L^*_M} \sim \|u\|_{M(u) \in L^*_M}$.

**Lemma 2.** If $M(u) \in Z^*(a,b)$, then $M(u) \in Z(a,b)$, i.e., the following conditions are fulfilled:

$$\varphi(2u) = O \left( \varphi(u) \right), \quad \int_0^u \frac{\varphi(t)}{t^{\mu+1}} dt = O \left( \frac{\varphi(u)}{u^\mu} \right) \quad (u \to \infty),$$

$$\varphi(2u) = O \left( \varphi(u) \right), \quad \int_0^u \frac{\varphi(t)}{t^{\mu+1}} dt = O \left( \frac{\varphi(u)}{u^\mu} \right) \quad (u \to 0).$$

This lemma is due to Chen (see [4], Theorem 1).

Let $\{w_k(x)\}$ be a Walsh system (in Kaczmarz’s numbering) and let $f \in L^*_M (0, 1)$ have a Fourier-Walsh expansion

$$f \sim \sum_{k=0}^{\infty} a_k w_k (x).$$

We put

$$\Delta_0 (x) = a_0, \quad \Delta_{l} (x) = \sum_{k=l-1}^{l-1} a_k w_k (x) \quad (l = 1, 2, \ldots).$$

**Lemma 3.** If $M \in Z(a,b)$, then

$$\int f(x) dx = \int M (\sum_{k=0}^{\infty} \Delta_k^a (x)) dx \quad (f \in L^*_M)$$

(see [4], Theorem 18).

**Consequence 1.** If $\{r_k(x)\}$ is a Rademacher system, and $M \in Z(a,b), f \in L^*_M$, $f = \sum b_k r_k (x)$, then