ON PAIRS OF $\ell$-KÖTHE SPACES

Erdal Karapınar*

Received 12:06:2009 : Accepted 26:02:2010

Abstract

Let $\ell$ be a Banach sequence space with a monotone norm $\| \cdot \|_{\ell}$, in which the canonical system $(e_i)$ is a normalized unconditional basis. Let $a = (a_i), a_i \to \infty, \lambda = (\lambda_i)$ be sequences of positive numbers. We study the problem on isomorphic classification of pairs

$F = \left( K^\ell \left( \exp \left( - \frac{1}{p} a_i \right) \right), K^\ell \left( \exp \left( - \frac{1}{p} a_i + \lambda_i \right) \right) \right)$. 

For this purpose, we consider the sequence of so-called $m$-rectangle characteristics $\mu^m_F$. It is shown that the system of all these characteristics is a complete quasidiagonal invariant on the class of pairs of finite-type $\ell$-power series spaces. By using analytic scale and a modification of some invariants (modified compound invariants) it is proven that $m$-rectangular characteristics are invariant on the class of such pairs. Deriving the characteristic $\tilde{\beta}$ from the characteristic $\beta$, and using the interpolation method of analytic scale, we are able to generalize some results of Chalov, Dragilev, and Zahariuta (Pair of finite type power series spaces, Note di Mathematica 17, 121–142, 1997).

Keywords: $m$-rectangular characteristic, Power $\ell$-Köthe spaces, Linear topological invariants.

2000 AMS Classification: 46A45, 46B45.

1. Introduction

In this article, the problem of isomorphic classification of pairs of $\ell$-Köthe spaces is considered. The first result in this direction was given by V. Zakharyuta [23]. He introduced the so-called simultaneous diametral dimension $\Gamma(X,Y)$ for a pair of locally convex spaces $(X,Y)$, and proved that this characteristic is invariant with respect to simultaneous isomorphisms of pairs. This invariant was applied in [23, 21] to give estimates of extendible bases of analytic functions. Later Dragilev ([15, 16]), using those invariants,

*Atılım University, Department of Mathematics, İncek 06836, Ankara, Turkey.
E-mail: erdalkarapinar@yahoo.com