The relation between 2-norm spaces and no inverting 2-modular spaces

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Abstract

In this talk, we study 2-norm spaces, and 2-modular spaces. In particular, no inverting 2-modular spaces are studied, and then given a corollary about the relation between two 2-modulars which one of them has β-homogeneity and the other one has some special properties.

Keywords: 2-modular spaces, 2-norm spaces, inverting 2-modular spaces, β-homogeneity
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1 Introduction

A linear 2-norm space, denoted $(X, \|\cdot,\cdot\|)$, which $\|\cdot,\cdot\| : X^2 \to \mathbb{R}$ is a function, is defined by:

1. $\|x, y\| = 0 \Leftrightarrow x$ and y are linearly dependent,
2. $\|x, y\| = \|y, x\|$,
3. $\| - x, y\| = \|x, y\|$,
4. $\|x, y + z\| \leq \|x, y\| + \|x, z\|$,
5. $\|tx, y\| = |t|\|x, y\|$ for every $x, y \in X$ and every $t \in \mathbb{R}$.

   The function $\|\cdot,\cdot\|$ is called a 2–norm on X.

The theory of 2-norm on a linear space was investigated by Gahler in [1].

Definition 1.1. Let X be a real vector space of dimension more than two. A real valued function $\rho(\cdot,\cdot)$ on X^2 satisfying the following properties is called a 2-modular on X:

1. $\rho(x, y) = 0$ if and only if x, y are linearly dependent,
2. $\rho(x, y) = \rho(y, x)$,
3. $\rho(-x, y) = \rho(x, y)$,

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