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2-WOVEN FRAMES IN 2-HILBERT SPACES

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Abstract: In this paper, we introduce 2-woven frames in 2- Hilbert spaces and explore some of their properties. Also, 2-woven frame operators are defined and some related results for these operators are established in 2-Hilbert spaces.

Keywords and Phrases: 2-woven frame, 2-inner product, 2-Hilbert space, 2-woven frame operators.

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1. Introduction

Frames in Hilbert space were introduced by Duffin and Schaeffer in their work on nonharmonic Fourier series [6], reintroduced by Daubechies et al. [4] in 1986 and since then work on frames is going on. Frame theory has left a distinct mark in applied mathematics and engineering and some properties of frames have made them an important part of functional analysis [7, 9].

The concept of 2-inner product space was first introduced by Diminnie et al. [5] and frames in 2-Hilbert space were introduced by Arefijamaal and Sadeghi [1].

The concept of woven frames was introduced to deal with some problems in wireless sensor networks and signal processing by Bemrose et al. [2] in 2015 and frame related operators for woven frames were recently defined by A. Rahimi et al. [8].

Throughout the paper, I denotes a finite or countably infinite index set, $\mathbb{N}$ set of natural numbers and for $k \in \mathbb{N}, [k] = \{1, ..., k\}$, $[k]^c = \mathbb{N} \setminus [k] = \{k+1, k+2, ...\}$.