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## Tensor product of 2-K-frames in 2-Hilbert spaces

### Communication Info

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### Abstract

The aim of our article is to introduce the tensor product of 2-K-frames in 2-Hilbert spaces following the approach of the Tensor Product of 2-Frames in 2-Hilbert Spaces developed by G. Upender Reddy [3]. We will present some results on this subject. We demonstrate that the tensor product of two 2-K frames is a 2-K frame for the tensor product of 2-Hilbert spaces. We will also establish some results on the tensor product of 2-K frames. To address this topic, we will first review the concept of 2-k-frames in a 2-Hilbert space  $H$ , which was studied in my latest article, currently being published in the "International Journal of Analysis and Applications", where  $K$  is a  $\mathcal{E}$ -bounded linear operator on  $H$  for a fixed element  $\mathcal{E}$  in  $H$ , and recall the properties we have already explored concerning 2-K-frames in a 2-Hilbert space, which will be useful in the subject of tensor product of this kind of frame. Finally, we address our main topic, which is the tensor product of 2-K-frames.

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### References

- [1] Arefijamaal, Ali Akbar and Sadeghi, Ghadir, Frames in 2-inner product spaces, IRANIAN JOURNAL OF MATHEMATICAL SCIENCES AND INFORMATICS (IJMSI). 2013 (2000).
- [2] Mazaheri, H and Kazemi, R, Some results on 2-inner product spaces, Novi Sad Journal of Mathematics. 2007, 35-- 40. University of Novi Sad, Faculty of Science, Institute of Mathematics.
- [3] Reddy, Upender G, Tensor Product of 2-Frames in 2-Hilbert Spaces, Scientific Research Publishing. 2016 , 517-522.
- [4] Reddy Upender. G, Reddy Gopal.N and B. Krishna Reddy Krishna. B, Frame Operator and Hilbert-Schmidt, Operator in Tensor Product of Hilbert Spaces, Journal of Dynamical Systems and Geometric Theories, 2009,61-70.
- [5] Xiao, Xiangchun and Zhu, Yucan and Gävruta, Laura, Some properties of K-frames in Hilbert spaces, Results in mathematics. 2013, 1243--1255. Springer.