Accepted Manuscript

Decomposition matrices for the special case of data on the triangular lattice of $SU(3)$

M. Bodner, J. Patera, M. Szajewska

PII: S1063-5203(16)30037-9
DOI: http://dx.doi.org/10.1016/j.acha.2016.07.001
Reference: YACHA 1152

To appear in: *Applied and Computational Harmonic Analysis*

Received date: 12 February 2016
Revised date: 14 April 2016
Accepted date: 1 July 2016

Please cite this article in press as: M. Bodner et al., Decomposition matrices for the special case of data on the triangular lattice of $SU(3)$, *Appl. Comput. Harmon. Anal.* (2016), http://dx.doi.org/10.1016/j.acha.2016.07.001

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Decomposition matrices for the special case of data on the triangular lattice of $SU(3)$

M. Bodner[a], J. Patera[a,b], M. Szajewska[c,b]

[a] *MIND Research Institute, 111 Academy Dr., Irvine, California 92617*
[b] *Centre de recherches mathématiques, Université de Montréal, C. P. 6128, Centre-ville, Montréal, H3C 3J7, Québec, Canada*
[c] *Institute of Mathematics, University of Bialystok, 1M Ciołkowskiego, PL-15-245, Bialystok, Poland*

Abstract

A method for the decomposition of data functions sampled on a finite fragment of triangular lattices is described for the lattice corresponding to the simple Lie group $SU(3)$. The basic tile (fundamental region) of $SU(3)$ is an equilateral triangle. The decomposition matrices refer to lattices that carry data of any density. This main result is summarized in Section 4 Theorem 2.

Keywords: decomposition matrices, discrete Fourier transform, $SU(3)$ group

1. Introduction

The processing of digital data sampled on some fragment F of a lattice is a standard problem of data processing in the 2-dimensional real Euclidean space $\mathbb{R}^2$ [3, 6]. Typically for two dimensional data, it is common to sample data utilizing a rectangular lattice. However, this is not always the ideal choice in terms of considerations such as sampling density. For example it has been shown that for isotropic fields in $\mathbb{R}^2$ the hexagonal lattices are useful [5]. Equally common is the need to process a series of pictures on the same fragment of the lattice (e.g. video) [5]. In many cases an important first step to various data processing problems is the decomposition of the data into a finite series of special functions. The maximal number of non-zero terms such a series can have is equal to the number of lattice points in F which carry data.

Download English Version:

https://daneshyari.com/en/article/5773572

Download Persian Version:

https://daneshyari.com/article/5773572

Daneshyari.com