

# On discrete GB-splines

Boris I. Kvasov\*

(Received 7 August 2000)

## Abstract

Explicit formulae and recurrence relations are obtained for discrete generalized B-splines (discrete GB-splines for short). Properties of discrete GB-splines and their series are studied. It is shown that the series of discrete GB-splines is a variation diminishing function and the systems of discrete GB-splines are weak Chebyshev systems.

\* School of Mathematics, Suranaree University of Technology, Nakhon Ratchasima 30000, THAILAND. <mailto:boris@math.sut.ac.th>

<sup>0</sup>See <http://anziamj.austms.org.au/V42/CTAC99/Kvas> for this article and ancillary services, © Austral. Mathematical Soc. 2000. Published 27 Nov 2000.

Contents	C878
----------	------

## Contents

1	Introduction	C878
2	Discrete generalized splines	C879
3	Construction of discrete GB-splines	C882
4	Properties of discrete GB-splines	C885
5	Local approximation by discrete GB-splines	C887
6	Recurrence formulae for discrete GB-splines	C890
7	Series of discrete GB-splines (uniform case)	C892
	References	C898

## 1 Introduction

The tools of generalized splines and GB-splines are widely used in solving problems of shape-preserving approximation (e.g., see [7]). Recently, in [1] a difference method for constructing shape-preserving hyperbolic tension splines as solutions of multipoint boundary value problems was developed. Such an approach permits us to avoid the computation of hyperbolic func-