Weak Solutions for Anisotropic Nonlinear Discrete Dirichlet Boundary Value Problems in a Two-Dimensional Hilbert Space

I. Ibrango [1*], B. Koné [2], A. Guiro [3] and S. Ouaro [4]

[1] *Laboratoire de Mathématiques et Informatique, UFR, Sciences et Techniques, Université Nazi Boni, 01 BP 1091 Bobo-Dioulasso 01, Burkina Faso,*
[2] *Laboratoire de Mathématiques et Informatique, UFR, Sciences Exactes et Appliquées, Université Joseph Ki-Zerbo, 03 BP 7021 Ouagadougou 03, Burkina Faso.*
[3] *Laboratoire de Mathématiques et Informatique, UFR, Sciences et Techniques, Université Nazi Boni, 01 BP 1091 Bobo-Dioulasso 01, Burkina Faso.*
[4] *Laboratoire de Mathématiques et Informatique, UFR, Sciences Exactes et Appliquées, Université Joseph Ki-Zerbo, 03 BP 7021 Ouagadougou 03, Burkina Faso.*

Abstract: Using a minimization method we study the existence of weak solutions for a family of nonlinear discrete Dirichlet boundary value problems where the solution lies in a discrete $(T_1 \times T_2)$-Hilbert space. The originality of this work is the study done on a two-dimensional Hilbert space.

1 Introduction

In the last few years, great attention has been paid to the study of fourth-order nonlinear difference equations. These equations have been widely used to study discrete models in many fields such as computer science, economics, neural network, ecology, cybernetics, etc. For background and recent results, we refer the reader to [3]– [12], [13] and the references therein.

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* Corresponding author: `mailto:ibrango2006@yahoo.fr`