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*In memory of Professor Borislav D. CRSTICI on the Centenary of his birth.*

**DEDICATED TO THE MEMORY OF PROF. DR. BORISLAV D. CRSTICI**  
**(26 MARCH 1924 – 20 AUGUST 2014)**

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**STRONG DICHOTOMY WITH GROWTH RATES**  
**FOR LINEAR DISCRETE TIME SYSTEMS IN**  
**BANACH SPACES**

**Carmen-Florinela POPA**

**Abstract.** The purpose of this paper is to present characterizations of Datko-type for the concepts of strong  $h$ -dichotomy and  $h$ -dichotomy, are given using both invariant and strongly invariant projections sequences, for linear discrete time systems in Banach spaces. Also, as consequences we obtain characterizations for uniform  $h$ -dichotomy, strong exponential/polynomial dichotomy and exponential/polynomial dichotomy.

*Keywords and phrases:* discrete time systems,  $h$ -dichotomy, strong  $h$ -dichotomy, growth rates.

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**CLASSIFYING SPACES FOR FAMILIES**  
**OF SUBGROUPS FOR 8 -LOCATED GROUPS**

**Ioana-Claudia LAZĂR**

**Abstract.** We construct a low-dimensional classifying space for the family of virtually cyclic subgroups of a group acting properly on an 8-located complex with the  $SD'$ -property. The key property we use is that the minimal displacement set in an 8-located complex with the  $SD'$  property embeds isometrically into

the complex and it is systolic.

*Keywords and phrases:* simplicial complex, 8-location, SD' property, minimal displacement set, classifying spaces.

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## ON THE STABILITY OF MULTIPLIERS ON BANACH ALGEBRAS

**Laura MANOLESCU**

**Abstract.** In this paper, we give new results concerning the Hyers-Ulam stability of multipliers on Banach algebras. So, we extend some results obtained in 2004 by T. Miura, G. Hirasawa and S.E. Takahasi.

*Keywords and phrases:* multipliers, Hyers-Ulam stability, Banach algebra.

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## CONTRIBUTIONS TO THE STUDY OF THE TURNING CURVE OF A WHEELED TRACTOR

**Marius Valentin BOLDEA, Daniel POPA**

**Abstract.** This paper presents an analytical method for determining the turning curve of a wheeled tractor using certain simplifying assumptions. The study addresses the challenges associated with the turning curve, which is significantly influenced by the rotation of the front wheels relative to the longitudinal axis. By formulating the problem analytically, the paper derives equations governing the tractor's movement, providing an intrinsic description of the desired curve. The analytical approach reveals that the turning trajectory consists of two arcs of Cornu's spiral and a circular arc. Comparisons between the graphical method and the proposed analytical solution demonstrate the efficacy and simplicity of the latter. The main parameters of the turning curve are computed directly, facilitating practical applications in agricultural operations..

*Keywords and phrases:* Wheeled tractor, turning curve, Cornu's spiral, analytical method, agricultural machinery, intrinsic equation, curvature radius.

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**DYNAMICS OF a FIVE-DIMENSIONAL  
MATHEMATICAL MODEL  
FOR UNEMPLOYMENT**

**Loredana Flavia VESA (GABOR)**

**Abstract.** The purpose of this paper is to develop and analyse a five-dimensional mathematical model of labor market slack, incorporating both unemployment and employment characterised by limited working hours.

*Keywords and phrases:* unemployment model, equilibrium points, local stability, global stability.

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