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Contents and abstracts

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**ON CONTRIBUTION OF DYNAMICAL
SYSTEMS TO EPIDEMIOLOGY**

Gheorghe MOZA, Joan TORREGROSA

Abstract. The involvement of mathematical modeling in understanding the spreading of infectious diseases is briefly presented in this short review. The article addresses to different readers, from specialists familiar to the field of mathematical modeling to the larger public interested in these topics.

Keywords and phrases: dynamical systems

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**ON THE PERIODIC AND HOMOCLINIC ORBITS
OF A HAMILTON-POISSON SYSTEM**

Cristian LĂZUREANU, Jinyoung CHO

Abstract. In this paper, we study a Hamilton-Poisson system that has a single family of equilibrium points. We show that there are periodic orbits around all the nonlinearly stable equilibrium points, and homoclinic orbits that connect each unstable equilibrium point with itself. We point out these properties in connection with the energy-Casimir mapping associated to the considered system.

Keywords and phrases: Hamilton-Poisson system, energy-Casimir mapping, stability, periodic orbits, homoclinic orbits

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A STATISCAL ANALYSIS OF DENTAL BRACKETS TYPES

Hazem ABBAS, Romeo NEGREA

Abstract. In paper we present a statistical analysis of a problem from real word, choose the adequate type of dental brackets for children in a dental clinic. A generalized regression model by Poisson type was used to analyzed two data group of children who use or used a dental brackets by different types..

Keywords and phrases: Poisson regression, generalized regression models, statistical tests.

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A SPRAY THEORY FOR THE GEOMETRIC METHOD IN HYDRODYNAMICS

Emanuel-Ciprian CISMAȘ

Abstract. We present a brief spray theory necessary for the geometric method in hydrodynamics and shape analysis. We make use of the convenient calculus to complete a unitary approach started by P. Michor and A. Krieg

Keywords and phrases: Euler-Poincaré equations, diffeomorphism group of the circle

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PIECEWISE POLYNOMIAL LEAST SQUARES METHOD FOR NONLINEAR HEAT TRANSFER PROBLEMS

Mădălina Sofia PAȘCA

Abstract. In this paper is used a recently introduced approximation method, namely the Piecewise Polynomial Least Squares Method (PWPLSM), in order to compute analytical approximate polynomial solutions for several nonlinear heat transfer problems. Analyzing the errors obtained by applying the Piecewise Polynomial Least Squares Method with those found in the literature, the accuracy of the method is illustrated.

Keywords and phrases: Nonlinear heat transfer problems, Piecewise Polynomial Least Squares Method (PWPLSM), analytical approximate polynomial solutions.

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