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THE FLOW OF WILLIAMSON FLUID WITH PRESSURE DEPENDENT VISCOSITY: AN APPROXIMATE ANALYTIC SOLUTION

Remus-Daniel ENE, Bogdan CĂRUNTU

Abstract. A recently modified version of the Optimal Homotopy Asymptotic Method (OHAM) is employed to compute for the first time approximate analytic solutions for the flow of a Williamson fluid with pressure dependent viscosity. The comparison with numerical results show that our approximate analytic solutions are very accurate. The procedure presented is valid even if the nonlinear differential equation does not contain any small or large parameters.

Keywords and phrases: optimal homotopy asymptotic method (OHAM), Poiseuille flow, Williamson fluid

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INDICES OF SHARPNESS FOR PARSEVAL FRAMES, QUANTUM EFFECTS AND OBSERVABLES

Maria-Anastasia JIVULESCU, Pasc GĂVRUTA

Abstract. In this paper, we introduce some indices for quantum effects and observables (POVM). These indices introduce a measure of closeness between the quantum effects and sharp quantum effects and between the observables (POVM) and sharp observables (PVM).

Keywords and phrases: frame; quantum effect; POVM

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ON THE FEEDBACK LINEARIZATION FOR THE 2D PREY-PREDATOR DYNAMICAL SYSTEMS

Adela IONESCU, Florian MUNTEANU

Abstract. In this paper we take into account the problem of finding a state feedback control law for the 2D Lotka-Volterra system, in order to obtain a linear time invariant form of this system.

Keywords and phrases: Volterra-Lotka equations, feedback linearization, control law

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ON THE STABILITY PROBLEM IN MODULAR SPACES

G. Zamani ESKANDANI

Abstract In this paper, by using fixed point theory, we investigate the generalized Hyers–Ulam stability of an additive type functional equation and the classical quadratic functional equation in modular spaces.

Keywords and phrases: fuzzy systems, solar irradiation, model accuracy

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TAKAGI-SUGENO FUZZY MODEL FOR COMPUTING SOLAR RADIATION IN TIMISOARA

Remus BOATĂ

Abstract. A new Takagi-Sugeno fuzzy model for computing solar radiation is reported in this paper. Data measured in Timisoara, Romania, are used for building the model. The modeling procedure is fully described. The results show that the new fuzzy model has an acceptable accuracy.

Keywords and phrases: fuzzy systems, solar irradiation, model accuracy

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COMPARISON BETWEEN THE REFRACTIONS OF THREE-DIMENSIONAL ELECTRIC AND MAGNETIC FIELDS IN RANDOM ANISOTROPIC MEDIA WITH PERMANENT POLARIZATION MAGNETIZATION

Ioan BERE, Ildiko TATAI

Abstract. This paper is a continuation of the paper [8] and shows the more general case of the refractions of 3D (three-dimensional) electric and magnetic fields in random anisotropic media with permanent polarization / magnetization. Is analysed the analogy between the equations describing the refraction of 3D electric field lines in materials with permanent polarization, respectively the equations describing the refraction of 3D magnetic field lines in permanent magnets; in both cases, the materials have random anisotropy. The problem of refractions in random anisotropic materials with permanent polarization / magnetization is approached in two variants: with usual (classic) quantities, respectively with new quantities defined by author.

Keywords and phrases: Random anisotropy, 3D electric and magnetic fields, permanent polarization / magnetization, refraction, formal analogy

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DESIGN AND CONSTRUCTION OF A THERMOSOLAR INSTALATION WITH FRESNEL LENS AND STIRLING ENGINE

Simona ILIE, Ioan LUMINOSU, Dumitru TOADER, Aldo De SABATA, Traian ZAMFIR

Abstract. This paper presents a study on different types of concentrating solar power technologies (CSP) starting from results on the solar potential in the south-western part of Romania based on measurements carried out for a period of 10 years. The main objective is designing, testing and realizing a prototype of a micro solar plant to produce electricity and heat using Fresnel lenses and Stirling engine.

Keywords and phrases: Renewable energy, Fresnel lens, Stirling engine, solar concentrators, solar radiation

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