BULETINUL ŞTIINŢIFIC
al Universităţii Politehnica Timişoara, Romania
SCIENTIFIC BULLETIN OF
Politehnica University of Timişoara, Romania

Contents and abstracts

Seria MATEMATICĂ - FIZICĂ
Transactions on MATHEMATICS & PHYSICS
Volume 61(75), Issue 2, 2016, ISSN 1224-6069, ISSN-L 1224-6069

Mathematics

SOME INEQULITIES FOR POWER SERIES WITH POSITIVE COEFFICIENTS

Loredana CIURDARIU, Nicuşor MINCULETE

Abstract. In this paper we use a technique given by Ibrahim, Dragomir and Mortici, in order to prove and enunciate several inequalities starting from some classical inequalities. We present an improvement of Nesbitt's inequality and also a reverse of Nesbitt's inequality. Other important results which appear in the paper are some generalizations of well-known inequalities obtained by convergent power series with positive coefficients.

Keywords and phrases: Power series, Young's inequality

Address: **Loredana Ciurdariu**, Department of Mathematics, Politehnica University of Timisoara, Victoriei 2, 300006, Timisoara, Romania
E-mail: loredana.ciurdariu@upt.ro

Nicuşor Minculete, Transilvania University of Braşov, Street Iuliu Maniu 50, Braşov - 500091, Romania
E-mail: minculeten@yahoo.com

A COMPETITIVE NON-COOPERATIVE MARKET GAME

Sorin LUGOJAN

Abstract. A particular case non-cooperative game is studied for a market which responds to competitive demands in the most appropriate mode, that is a closed as possible to the demands.

Keywords and phrases: allocation of resources, influences of consumers, Nash equilibrium point, outcome (payoff), preferences (actions).

Address: **Sorin Lugojan**, Department of Mathematics, Politehnica University of Timisoara, P-ta. Victoriei 2, 300006, Timisoara, Romania

E-mail: sorin.lugojan@upt.ro

THE CONNECTION BETWEEN KOSTANT'S GEOMETRIC QUANTIZATION AND THE SYMMETRICAL OPTIMUM METHOD FOR CONTROLLER TUNING VIA A PARTICULAR HAMILTONIAN MECHANICAL SYSTEM

Ciprian HEDREA, Lorena HEDREA

Abstract. In this paper we present a new example of Hamiltonian mechanical system which is equivalent at classic level with the two systems presented in [9], but not in quantum level with the two ones, and the way one can design a linear controller for this mechanical system using the symmetrical optimum method.
Keywords and phrases: quantization, Hamiltonian mechanical system, symmetrical optimum method, linear controller.

Address: **Ciprian Hedrea**, Department of Mathematics, Politehnica University of Timisoara, P-ta. Victoriei 2, 300006, Timisoara, Romania
E-mail: ciprian.hedrea@upt.ro

Lorena Hedrea, Department of Automation and Applied Informatics, Politehnica University of Timisoara, P-ta. Victoriei 2, 300006, Timisoara, Romania
E-mail: elena.constantin@student.upt.ro

TRANSIENTS IN HYDRODYNAMIC CONVERTERS – MATHEMATICAL MODELING OF DRIVEN MECHANISM

Eugen DOBÂNDĂ, Adriana Sida MANEA, Mircea BĂRGLĂZAN

Abstract. Hydrodynamic converters are an important part of automatic transmission. Starting an electric motor coupled to a hydrodynamic converter represents a transient regime which begins with the startup of electrical motor drive and last to nominal regime. Knowing this process is important in order to evaluate the parameters used in choosing the electrical drive and the rest of transmission components. This includes the calculus of starting characteristic times of electric drive (which must be short enough) and the exit to an execution mechanism (which must be long enough), determinations of the mechanic load of the drive mechanism, and so on.
Keywords and phrases: hydrodynamic converter, driven mechanism, mathematical modeling.

Address: **Eugen Dobândă, Adriana Sida Manea, Mircea Bărglăzan**, Faculty of Mechanical Engineering, Department of Mechanical Machines, Equipment and Transportation, Politehnica University of Timisoara, B-dul. Mihai Viteazu, 1, 300222 - Timisoara, Romania.

E-mail: eugen.dobanda@upt.ro ; adriana.manea@upt.ro; mircea.barglazan@upt.ro

A NEW APPROACH OF REFRACTION FOR 3D–ELECTRIC FIELD IN NONLINEAR DIELECTRICS WITH PERMANENT POLARIZATION AND RANDOM ANISOTROPY PART ONE: A NEW PERMITTIVITY FOR DIELECTRIC WITH PERMANENT POLARIZATION

Ioan BERE

Abstract. Using a new permittivity-defined by author (in Part one) for dielectrics with permanent polarization –we will demonstrate new theorems of refraction (in Part two), more general, for three-dimensional (3D) electric field lines at the separation surface of two nonlinear and anisotropic materials with permanent polarization, which have random polarization main directions. Then (in Part three), some applications of the new refraction theorems are presented, for particular cases.

Keywords and phrases: a new permittivity, permanent polarization, random anisotropy, 3D refraction theorems.

Address: **Ioan Bere,** Department of Physical Foundation of Engineering, Politehnica University of Timisoara, B-dul. V. Pârvan, 2, 300223 – Timișoara, Romania.

E-mail: ioan.bere@et.upt.ro