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In this issue

Research Article

Open Access Research Article PTZAID:AMP-4-128

Paintings crack initiation time caused by microclimate

Published On: November 17, 2021 | Pages: 092 - 101

Author(s): Mohammad Yaghoub Abdollahzadeh Jamalabadi*

The current paper aims to use an irreversible cohesive zone model to investigate the effects of temperature and relative humidity cycles on multilayer thin-film paintings. The homogenous one-dimensional paint layers composed of alkyd and acrylic gesso over a canvas foundation (support) with known constant thicknesses are considered as the mechanical model of painting. ...

Abstract View Full Article View DOI: 10.17352/amp.000028

Open Access Research Article PTZAID:AMP-4-127

Random oscillations of nonlinear systems with distributed Parameter

Published On: November 16, 2021 | Pages: 084 - 091

Author(s): Levan Gavasheli* and Anri Gavasheli

The article analyzes random vibrations of nonlinear mechanical systems with distributed parameters. The motion of such systems is described by nonlinear partial differential equations with corresponding initial and boundary conditions. In our case, the system as a whole is limited, so any motion can be considered as the sum of the natural oscillations of the system, i ...

Abstract View Full Article View DOI: 10.17352/amp.000027

Open Access Research Article PTZAID:AMP-4-125

Research on rolling bearing fault feature extraction based on entropy feature

Published On: August 16, 2021 | Pages: 066 - 073

Author(s): Zihan Wang and Yong Jian Sun*

In large machinery, the most common element we can use is rolling bearing. When the rolling bearing fails, it is very likely to affect the normal operation of the equipment, or even cause danger. Therefore, it is necessary to monitor and diagnose the bearing fault in advance. The most important step in fault diagnosis is feature extraction. This is the research conten ...

Abstract View | Full Article View | DOI: 10.17352/amp.000025

Open Access Research Article PTZAID:AMP-4-124

Waves of the dynamics of the rate of increase in the parameters of Covid-19 in Russia for 03/25/2020-12/31/2020 and the forecast of all cases until 08/31/2021

Published On: July 27, 2021 | Pages: 048 - 065

Author(s): Mazurkin PM*

In applied mathematics and statistics, only linear equations are still used. The article proposes the sum of asymmetric wavelets with variable amplitudes and periods of oscillation. As a result, the behavior of any object or subject is given by the sum of vibrations. Using the identification method based on statistical daily data on four indicators of the dynamics of ...

Abstract View | Full Article View | DOI: 10.17352/amp.000024

Open Access Research Article PTZAID:AMP-4-123

From linear algebra to quantum information

Published On: July 20, 2021 | Pages: 032 - 047

Author(s): LW Yu, NL Wang* and S Kanemitsu

Anticipating the realization of quantum computers, we propose the most reader-friendly exposition of quantum information and qubits theory. Although the latter lies within framework of linear algebra, it has some flavor of quantum mechanics and it would be easier to get used to special symbols and terminologies. Quantum mechanics is described in the language of functi ...

Abstract View | Full Article View | DOI: 10.17352/amp.000023

Open Access Research Article PTZAID:AMP-4-121

Numerical investigations for flow past two square rods in staggered arrangement through Lattice Boltzmann method

Published On: July 03, 2021 | Pages: 016 - 027

Author(s): Raheela Manzoor*, Tehmina Naz, Maliha Jalil, Sajida Perveen, Rahila Akbar, Yasmeen Akhtar and Neelam Panezai

A numerical study for two dimensional (2-D) incompressible flow past over two square rods in staggered arrangement detached with a rectangular control rod is conducted by applying single-relaxation-time lattice Boltzmann method (SRT-LBM). This study is conducted basically to reduce the fluid forces and to suppress the vortex shedding through passive control method und ...

Abstract View | Full Article View | DOI: 10.17352/amp.000021

Open Access Research Article PTZAID:AMP-4-118

Energy and exergy analyses of combustion process in a DI diesel engine fuelled with diesel-biodiesel blends

Published On: March 15, 2021 | Pages: 001 - 008

Author(s): Shahnaz Habibian, Rahim Karami* and Marziyeh Hoseinpour

Exergy analysis is achieved by assessing exergies related to the inlet fuel and air, output power, heat loss, gas exhaust loss and destruction or system irreversibility. The exergy fraction of each component is considered for all mixtures by dividing the individual exergy quantity into the exergy of the fuel. In the present investigation, the combustion process has be ...

Abstract View | Full Article View | DOI: 10.17352/amp.000018

Review Article

Open Access Review Article PTZAID:AMP-4-129

An introduction to the superunified theory of quantum fields & fundamental interactions (Discoveries in pure mathematics)

Published On: November 19, 2021 | Pages: 102 - 111

Author(s): Besud Chu Erdeni*

This is intended to describe the physical Universe as self-excited and self-organized mathematical continuum. There

does exist the universal pure (not applied) mathematical machine perceived by the intelligent observers in a capacity of certain material world. In this short article we are able to indicate only some key points of the theory which suggests practically ...

Abstract View | Full Article View | DOI: 10.17352/amp.000029

Open Access Review Article PTZAID:AMP-4-126

On the Bogolubov's chain of kinetic equations, the invariant subspaces and the corresponding Dirac type reduction

Published On: October 14, 2021 | Pages: 074 - 083

Author(s): Yarema A Prykarpatsky, Radoslaw Kycia and Anatolij K Prykarpatski*

We study a special class of dynamical systems of Boltzmann-Bogolubov and Boltzmann-Vlasov type on infinite dimensional functional manifolds modeling kinetic processes in manyparticle media. Based on geometric properties of the manyparticle phase space we succeded in dual analysing of the infinite Bogolubov hierarchy of manyparticle distribution functions and their Ham ...

Abstract View | Full Article View | DOI: 10.17352/amp.000026

Open Access Review Article PTZAID:AMP-4-119

Theoretical calculation of self-propagating high-temperature synthesis (SHS) preparation of AlB12

Published On: March 23, 2021 | Pages: 009 - 112

Author(s): Chao Wang*, Xiaoming Cao, Mengge Dong, Lu Zhang, Jianxing Liu, Xiaozhou Cao* and Xiangxin Xue*

Although experimental results of preparing AlB12 by self-propagating high-temperature synthesis using Mg-B2O3-Al2O3 as raw material has been studied, the theoretical calculations for the preparation of AlB12 have not been examined as thoroughly. In this article, for the first time, we report on the study of theoretical calculation and the adiabatic temperature, calcul ...

Abstract View | Full Article View | DOI: 10.17352/amp.000019

Short Communication

Open Access Short Communication PTZAID:AMP-4-130

On the special spherical triangles for physical and cosmological applications

Published On: November 25, 2021 | Pages: 112 - 114

Author(s): S Kalimuthu*

It is well known that a spherical triangle of 270 degree triangle is constructible on the surface of a sphere; a globe is a good example. Take a point (A) on the equator, draw a line 1/4 the way around (90 degrees of longitude) on the equator to a new point (B). ... The angle at each of the vertices (A, B, C) will be ninety degrees, for a total of 270 degrees as shown ...

Abstract View | Full Article View | DOI: 10.17352/amp.000030

Open Access Short Communication PTZAID:AMP-4-122

Dirac spinor's transformation under Lorentz mappings

Published On: July 15, 2021 | Pages: 028 - 031

Author(s): J Yaljá Montiel-Pérez, J López-Bonilla* and VM Salazar del Moral

For a given Lorentz matrix, we deduce the Dirac spinor's transformation in terms of four complex quantities. ...

Abstract View | Full Article View | DOI: 10.17352/amp.000022

Mini Review

Open Access Mini Review PTZAID:AMP-4-120

Application of algebra to trisect an angle of 60 degree

Published On: April 19, 2021 | Pages: 013 - 015

Author(s): M Sivasubramanian and S Kalimuthu*

Trisection of an angle, doubling the cube, squaring the circle, to draw a regular septagon and to deduce Euclid V from Euclid I to IV are the famous classical impossibilities. Recently, Sivasubramanian and Kalimuthu jointly and independently found several solutions for the parallel postulate problem. Their findings have been published in various peer reviewed internat ...

Abstract View | Full Article View | DOI: 10.17352/amp.000020