

The screenshot shows a web browser window with the address bar displaying the URL: <http://www.sciencedirect.com.proxy.kobson.nb.rs:2048/science/journal/aip/00207462>. The browser's address bar also shows the proxy server address: <http://www.kobson.nb.rs:2048/science/journal/aip/00207462>. The browser's address bar also shows the proxy server address: <http://www.kobson.nb.rs:2048/science/journal/aip/00207462>.

The browser window displays the Kobson website, which is a portal for the Mathematical Institute of the Serbian Academy of Sciences and Arts. The website features a search bar, a navigation menu, and a list of journals. The journal "International Journal of Non-Linear Mechanics" is highlighted.

The ScienceDirect website is also visible, showing the journal's page. The page includes a search bar, a navigation menu, and a list of articles. The article "Rotary motion of the parametric and planar pendulum under stochastic wave excitation" is highlighted.

The article "Rotary motion of the parametric and planar pendulum under stochastic wave excitation" is a research article by Ana M. Ljubojević, S. M. Stojanović, and Marija M. Stojanović. It is available online 14 January 2015. The article is in press, corrected proof, and available online 25 November 2014.

The article "Discrete fractional order system vibrations" is a research article by K.R. (Stevanović) Hedrih, J.A. Tenreiro Machado. It is available online 25 November 2014. The article is in press, corrected proof, and available online 25 November 2014.

The article "Elements of mathematical phenomenology of self-organization nonlinear dynamical systems: Synergetics and fractional calculus approach" is a research article by Mihailo P. Lazarević. It is available online 22 November 2014. The article is in press, corrected proof, and available online 22 November 2014.

The obtained results are illustrated.

☐ **Structural analogies on systems of deformable bodies coupled with non-linear layers** Original Research Article
In Press, Corrected Proof, Available online 26 November 2014
Katica R. (Stevanović) Hedrih, Julijana D. Simonović
[Abstract](#) [Close research highlights](#) [PDF \(1612 K\)](#)

Highlights

- Oscillatory resonant regimes in systems of coupled deformable bodies: plates, beams, belts or membranes.
- Phenomenological mapping and mathematical analogies of their structural models.
- Non-linear behavior phenomena: mode interactions, trigger of coupled singularities, resonant jumps and Hopf bifurcations.
- Amplitude and phase- frequencies curves in the resonant regimes.
- Stability of stationary two-frequency oscillating regimes.

☐ **Rigid body coupled rotation around no intersecting axes** Original Research Article
In Press, Corrected Proof, Available online 26 November 2014
Lilijana Veljović, Aleksandar Radaković, Dragan Milosavljević, Gordana Bogdanović
[Abstract](#) [Close research highlights](#) [PDF \(1534 K\)](#)

Highlights

- By vector connected to the pole and the axis the rigid body dynamics is described.
- Mass moment vectors can be new open way for applications in different areas.
- Variation of system parameters can change the dynamics of systems.

Fractional calculus approach is suggested to describe complex systems and processes.

☐ **The mathematical phenomenological mapping in non-linear dynamics of spur gear pair and radial ball bearing due to the variable stiffness** Original Research Article
In Press, Corrected Proof, Available online 14 November 2014
Ivana Atanasovska
[Abstract](#) [Close research highlights](#) [PDF \(1286 K\)](#)

Highlights

- Mathematical phenomenological mapping in non-linear dynamics.
- Non-linear dynamics of machine elements and systems.
- Vibration of spur gear pair and ball bearing.
- Stiffness functions for gear pair and ball bearings.
- Reduction the machine elements dynamics to the one-degree of freedom dynamics model.

☐ **Rayleigh-Bénard convection instability in the presence of spatial temperature modulation on both plates** Original Research Article
In Press, Uncorrected Proof, Available online 14 November 2014
Miloš M. Jovanović, Jelena D. Nikodijević, Milica D. Nikodijević
[Abstract](#) [Close research highlights](#) [PDF \(1720 K\)](#)

Highlights

- The random temperature perturbations of 10^{-3} in all nodes are sufficient to excite almost all Fourier modes in viscous 2D channel flow with spatially varying temperature boundary conditions at $Ra=1000$.
- The flow pattern is steady in the initial time period ($t \leq \tau/2$) when the boundary conditions are unsteady, and it becomes

☐ **Chaotic behavior of a body in a resistant medium** Original Research Article
In Press, Corrected Proof, Available online 13 November 2014
Vladimir S. Aslanov
[Abstract](#) [Close research highlights](#) [PDF \(1742 K\)](#)

Highlights

- Chaotic attitude motion of a rigid body in a resistant medium is studied.
- A biharmonic torque and small periodic perturbation act on the body.
- The biharmonic torque is an odd function of a nutation angle.
- Separatrix orbits and Melnikov function are determined in an analytical form.

☐ **Generalistics of unsteady MHD temperature boundary layer** Original Research Article
In Press, Corrected Proof, Available online 13 November 2014
Dragiša Nikodijević, Živojin Stamenković
[Abstract](#) [Close research highlights](#) [PDF \(1756 K\)](#)

Highlights

- Results presented in manuscript are in area of general characteristics of unsteady MHD temperature boundary layer, presenting as a fluid in coupled magnetic and temperature fields.
- Manuscript contains numerous graphical illustrations as results of analytical and numerical investigation interaction of different kinetic parameters of the coupled fields to the boundary fluid layer.

☐ **Stability of an equilibrium position of a pendulum with step parameters** Original

Stability of an equilibrium position of a pendulum with step parameters Original Research Article
In Press, Corrected Proof, Available online 13 November 2014
Anatoly Markeev
▶ Abstract ▼ Close research highlights PDF (651 K)

Highlights

- A pendulum affected by step parametric disturbance is considered.
- Non-linear problem of stability is solved for hanging and inverse pendulums.
- The results are presented in the plane of two parameters of the problem.

Wave propagation in layer with two preferred directions Original Research Article
In Press, Corrected Proof, Available online 13 November 2014
Dragan Milosavljevic, Gordana Bogdanovic, Ljiljana Veljovic, Aleksandar Radakovic, Mirjana Lazic
▶ Abstract ▼ Close research highlights PDF (314 K)

Highlights

- Equations for dispersion curves are obtained in form suitable for further analysis.
- Analysed plate is made of both highly anisotropic and constrained material.
- It has been shown that these two approaches may be connected by limiting process.
- Constraint of inextensibility leads to singular layers on the faces of the plate.
- Obtained dispersion relations give possibility to calculate distribution of displacements and stresses throughout plate

Autocatalator as the source of instability in the complex non-linear neuroendocrine model Original Research Article
In Press, Corrected Proof, Available online 13 November 2014
Stevan Mačesić, Željko Čupić, Slobodan Anić, Ljiljana Kolar-Anić
▶ Abstract ▼ Close research highlights PDF (306 K)

Highlights

- Both autocatalator as well as the model of the Hypothalamic-Pituitary-Adrenal (HPA) axis was analysed by means of the stoichiometric network analysis (SNA).
- The types of bifurcations and conditions for their existence in both models were determined.
- Mathematical analogy between these two models was established.

Fast non-resonance rotations of spacecraft in restricted three body problem with magnetic torques Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
Pavel Krasil'nikov
▶ Abstract PDF (896 K)

Stability of triangular libration points in a planar restricted elliptic three body problem in cases of double resonances Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
Olga Kholostova
▶ Abstract ▼ Close research highlights PDF (327 K)

Highlights

Differential equations for librational motion of gravity-oriented rigid body Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
E.A. Kosjakov, A.A. Tikhonov
▶ Abstract ▼ Close research highlights PDF (395 K)

Highlights

- A new notation for attitude dynamics of gravity-oriented body is introduced.
- This form generalizes equations in canonical variations.
- Both the potential and the non-potential disturbing torques are operative.
- A perturbation torque is given by a cubic approximation.
- The equations are convenient for asymptotic analysis of a body non-linear oscillations.

Secular perturbations of quasi-elliptic orbits in the restricted three-body problem with variable masses Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
A.N. Prokopenya, M.Zh. Minglibayev, B.A. Beketauov
▶ Abstract ▼ Close research highlights PDF (342 K)

Highlights

- Differential equations determining the secular perturbations of the orbital elements in the restricted problem of three bodies of variable masses may be integrable.
- Possible values of two integrals of motion, corresponding to the integrable cases, have been found.
- Analytical solutions of the evolutionary equations have been found in terms of elementary and elliptic functions.

with variable masses Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
 A.N. Prokopenya, M.Zh. Minglibayev, B.A. Beketauov
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Highlights

- Differential equations determining the secular perturbations of the orbital elements in the restricted problem of three bodies of variable masses may be integrable.
- Possible values of two integrals of motion, corresponding to the integrable cases, have been found.
- Analytical solutions of the evolutionary equations have been found in terms of elementary and elliptic functions.
- Points masses may vary isotropically with different rates while their sum reduces according to Meshcherskii law.


☐ Interplay between internal delays and coherent oscillations in delayed coupled noisy excitable systems Original Research Article
In Press, Corrected Proof, Available online 12 November 2014
 Ines Grozdanović, Kristina Todorović, Nebojša Vasović, Nikola Burić, Nataša Trišović
[Abstract](#) [Close research highlights](#) [PDF \(813 K\)](#)

Author-Highlights

- We study variations in coherence of spike trains produced by two stochastically perturbed FitzHugh–Nagumo excitable systems with internal and coupling time-delays.
- Internal time-delay and the coupling time-delay in some domains of values can substantially increase or decrease the coherence.
- Dependence of the coherence on the delays is qualitatively explained by considering the bifurcations in the system caused by them.

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