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Title: Robust Adaptive Exponential Synchronization of Stochastic Perturbed Chaotic Delayed Neural Networks with Parametric Uncertainties

Authors: Yang Fang, Kang Yan, Kelin Li

Sources: Mathematical Problems in Engineering, Volume 2014, Article ID 963081 (SCI)

Abstract: This paper investigates the robust adaptive exponential synchronization in mean square of stochastic perturbed chaotic delayed neural networks with nonidentical parametric uncertainties. A robust adaptive feedback controller is proposed based on Gronwally's inequality, drive-response concept, and adaptive feedback control technique with the update laws of nonidentical parametric uncertainties as well as linear matrix inequality (LMI) approach. The sufficient conditions for robust adaptive exponential synchronization inmean square of uncoupled uncertain stochastic chaotic delayed neural networks are derived in terms of linear matrix inequalities (LMIs). The effect of nonidentical uncertain parameter uncertainties is suppressed by the designed robust adaptive feedback controller rapidly. A numerical example is provided to validate the effectiveness of the proposed method.

Title: Synchronization of Chaotic Delayed Neural Networks via Impulsive Control

Author: Yang Fang, Kang Yan, Kelin Li

Sources: Journal of Applied Mathematics, Volume 2014, Article ID 305264 (SCI)

Abstract: This paper is concerned with the impulsive synchronization problem of chaotic delayed neural networks. By employing Lyapunov stability theorem, impulsive control theory and linear matrix inequality (LMI) technique, several newsufficient conditions ensuring the asymptotically synchronization for coupled chaotic delayed neural networks are derived. Based on these new sufficient conditions, an impulsive controller is designed. Moreover, the stable impulsive interval of synchronized neural networks is objectively estimated by combining the MATLAB LMI toolbox and one of the two given equations. Two examples with numerical simulations are given to illustrate the effectiveness of the proposed method.

Title: Wave breaking criterion and golbal solution for a generalized periodic coupled Camassa-Holm system

Author: Yunxi Guo, Ying Wang

Sources: Boundary Value Problems, 2014, 2014:155 (SCI)

Abstract: The local well-posedness for a generalized periodic coupled Camassa-Holm system is established in the Sobolev space $H^{s}(S) \times H^{s-1}(S)$ with s > 7/2. A wave-breaking criterion of strong solutions is acquired in the Sobolev space $H^{s}(S) \times H^{s-1}(S)$ with s > 3/2 by employing the localization analysis in the transport equation theory and a sufficient condition of global existence for the system is derived in the Sobolev space $H^{s}(S) \times H^{s-1}(S)$ with s > 3.

Keywords: a generalized periodic coupled Camassa-Holm system; wave-breaking criterion; local well-posedness; global solutions

Title: The local well-posedness and global solution for a modified periodic two-component Camassa-Holm system

Author: Yunxi Guo, Shaoyong Lai

- Sources: Journal of Computational Analysis and Applications, 2014, 413 (2014):641-647 (SCI)
- Abstract: The local well-posedness and global solution for a modified periodic two-component Camassa-Holm system on the circle S are established in the Sobolev space $H^{s} \times H^{s-2}$ with s > 7/2, which are different from that of the two-component Camassa-Holm system.
- Keywords: A modified periodic two-component; Camassa-Holm system; Local well-posedness; Global solution

Title: On a product operator from weighted Bergman-Nevanlinna spaces to weighted Zygmund spaces

Author: Zhi-jie Jiang

Sources: Journal of Inequalities and Applications, 2014, 2014:404 (SCI)

Abstract: Let $D=\{z \in C : |z| \in I\}$ be the open unit disk, φ an analytic self-map of D and ψ an analytic function in D. Let D be the differentiation operator and $W\varphi,\psi$ the weighted composition operator. The boundedness and compactness of the product operator $DW\varphi,\psi$ from weighted Bergman-Nevanlinna spaces to weighted Zygmund spaces on D are characterized.

Keywords: weighted Bergman-Nevanlinna space; product operator; weighted Zygmund space; little weighted Zygmund space

Title: Composition operators from weighted Bergman spaces to analytic function spaces of the upper half plane

Author: Zhi-jie Jiang

Sources: Utilitas Mathematica, 2014, 93:205-212 (SCI)

- Abstract: Let $Pi(+) = \{z \text{ is an element of } C : Imz > 0\}$ be the upper half-plane in the complex plane C. Motivated by some recent results by Stevic, this paper characterizes the bounded composition operator from the weighted Bergman space A(alpha)(P)(Pi(+)), $1 \le p = 0$, to the Zygmund-type space Z(infinity) (Pi(+)), the weighted-type space A(infinity) (Pi(+)) and the Bloch-type space B-infinity (Pi(+)).
- Keywords: Composition operator; weighted Bergman space; weighted-type space; Bloch-type space; Zygmund-type space

Title: Approximation methods for solutions of generalized multi-valued mixed quasi-variational inclusion systems

Author: Heng-You Lan, Fang Li1, Afrah AN Abdou, YJ Cho

Sources: Journal of Inequalities and Applications, 2014, 2014:461 (SCI)

- Abstract: The purpose of this paper is to introduce new approximation methods for solutions of generalized non-accretive multi-valued mixed quasi-variational inclusion systems involving (A,η)-accretive mappings in q-uniformly smooth Banach spaces and, by using the new resolvent operator technique associated with (A,η)-accretive mappings, Nadler's fixed point theorem and Liu's inequality, we prove some existence theorems of solutions for our systems by constructing the new Mann iterative algorithm. Further, we study the stability of the iterative sequence generated by the perturbed iterative algorithms. The results presented in this paper improve and generalize the corresponding results of recent works given by some authors.
- Keywords: (A, η)-accretive mapping; resolvent operator technique; generalized nonlinear mixed quasi-variational inclusion system; new Mann iterative algorithm with mixed errors; convergence and stability

Title: Graph-convergent analysis of over-relaxed (A,η,m)-proximal point iterative methods with errors for general nonlinear operator equations

Author: Heng-You Lan

Sources: Fixed Point Theory and Applications, 2014, 2014:161 (SCI)

- Abstract: In this paper, we introduce and study a new class of over-relaxed (A, η ,m)-proximal point iterative methods with errors for solving general nonlinear operator equations in Hilbert spaces. By using Liu's inequality and the generalized resolvent operator technique associated with (A, η ,m)-monotone operators, we also prove the existence of solution for the nonlinear operator inclusions and discuss the graph-convergent analysis of iterative sequences generated by the algorithm. Furthermore, we give some examples and an application for solving the open question (2) due to Li and Lan (Adv. Nonlinear Var. Inequal. 15(1):99-109, 2012). The numerical simulation examples are given to illustrate the validity of our results.
- Keywords: new over-relaxed proximal point iterative methods with error; general nonlinear operator inclusion; (A, η, m)-monotonicity framework; generalized resolvent operator technique; graph-convergent analysis

Title: Convergence analysis of new over-relaxed proximal point algorithm frameworks with errors and applications to general A-monotone nonlinear inclusion forms Author: Heng-You Lan Sources: Applied Mathematics and Computation, 2014, 230 (2014):154-163 (SCI)

- Abstract: The purpose of this paper is to introduce and study a new class of over-relaxed proximal point algorithm frameworks with errors based on general A-monotonicity. Further, by using Alber's inequalities, the definition of normalized duality mapping on the dual spaces of Banach spaces and the new proximal mapping technique associated with the general A-monotone operators, we discuss the approximation solvability of general A-monotone nonlinear inclusion forms in Banach spaces and prove the convergence analysis of iterative sequences generated by the algorithm frameworks via applying the Lipschitz continuity of M⁻¹ (that is, the inverse of multi-valued operator M) and the Lipschitz continuity of proximal mapping associated with the general A-monotone operators, respectively. Finally, some applications are given to show that the results presented in this paper improve, generalize and unify the corresponding results of recent works.
- Keywords: Solvability and convergence analysis; New over-relaxed proximal point algorithm; framework with errors; General A-monotonicity; General nonlinear inclusion form; General proximal mapping technique

Title: Stability of a class of fractional order nonlinear systems

Authors: Tianzeng Li, YuWang

Sources: Discrete Dynamics in Nature and Society, Volume 2014, Article ID 724270 (SCI)

Abstract: In this letter stability analysis of fractional order nonlinear systems is studied. Some new sufficient conditions on the local (globally) asymptotic stability for a class of fractional order nonlinear systems with order 0 < a < 2 are proposed by using properties of Mittag-Leffler function and the Gronwall inequality. And the corresponding stabilization criteria are also given. The numerical simulations of two systems with order 0 < a < 1 and two systems with order 1 < a < 2 illustrate the effectiveness and universality of the proposed approach.

Title: Designing synchronization schemes for fractional-order chaotic system via a single state fractional-order controller

Authors: Tianzeng Li, Yu Wang, Yong Yang

Sources: *Optik*, 2014, 125 (2014):6700–6705 (SCI)

Abstract: n this paper the synchronization of fractional-order chaotic systems is studied and a new single statefractional-order chaotic controller for chaos synchronization is presented based on the Lyapunov stabilitytheory. The proposed synchronized method can apply to an arbitrary three-dimensional fractional chaoticsystem whether the system is incommensurate or commensurate. This approach is universal, simple andtheoretically rigorous. Numerical simulations of several fractional-order chaotic systems demonstrate universality and the effectiveness of the proposed method.

Keywords: Fractional-order chaotic system; Synchronization; Fractional-order controller; Dynamic systems

Title: Control of fractional chaotic and hyperchaotic systems based on a fractional order controller

Authors: Li Tian-zeng, Wang Yu, Luo Mao-Kang

Sources: *Chinese Physics B*, Vol. 23, No. 8 (2014) 080501 (SCI)

- Abstract: We present a new fractional-order controller based on the Lyapunov stability theory and propose a control method which can control fractional chaotic and hyperchaotic systems whether systems are commensurate or incommensurate. The proposed control method is universal, simple, and theoretically rigorous. Numerical simulations are given for several fractional chaotic and hyperchaotic systems to verify the effectiveness and the universality of the proposed control method.
- Keywords: fractional-order chaotic system; chaos control; fractional-order controller; hyperchaos

Title: Designing synchronization schemes for fractional-order chaotic system via a single state fractional-order controller

Author: Tianzeng Li, Yu Wang, Yong Yang

Sources: Discrete Dynamics in Nature and Society, Volume 2014, Article ID 408972 (SCI)

Abstract: In this paper, the synchronization of fractional-order chaotic systems is studied and a newfractional-order controller for hyperchaos synchronization is presented based on the Lyapunov stability theory. The proposed synchronized method can be applied to an arbitrary four-dimensional fractional hyperchaotic system. And we give the optimal value of control parameters to achieve synchronization of fractional hyperchaotic system. This approach is universal, simple, and theoretically rigorous. Numerical simulations of several fractional-order hyperchaotic systems demonstrate the universality and the effectiveness of the proposed method.

Title: Forced vibration of pipe conveying fluid by the Green function method

Author: Yun-dong Li, Yi-ren Yang

Sources: Archive of Applied Mechanics, 2014 (SCI)

Abstract: This study presents a method of investigating the forced vibrations of pipe conveying fluid using Green function. The proposed method provides exact solutions in closed form. Green's functions for pipes with different homogenous and elastic boundary conditions are

also presented in this study. The natural frequencies of the fluid-conveying pipes can be obtained using the method of Green's function. The results demonstrate that Green's function is an efficient means of analyzing the forced vibration of pipes that conveying fluid.

Keywords: Pipe conveying fluid; Forced vibration; Green function

Title: NSE characterization of projective special group L5(2)

Author: Shitian Liu

Sources: Rend. Sem. Mat. Univ. Padova, 2014, 132: 123-132 (SCI)

- Abstract: Let G be a group and $\omega(G)$ be the set of element orders of G. Let $k \in \omega(G)$ and sk be the number of elements of order k in G. Let $nse(G)=\{sk \mid k \in \omega(G)\}$. In Khatami et al. and Liu, L3(2) and L3(4)are uniquely determined by nse(G). In this paper, we prove that if G is a group such that nse(G)=nse(L5(2)), then $G\cong L5(2)$.
- Keywords: Element order; projective special linear group; Thompson's problem; number of elements of the same order

Title: Common fixed points of ordered g-contractions in partially ordered metric spaces Author: Xiao-lan Liu

Sources: Fixed Point Theory and Applications, 2014, 2014:28 (SCI)

- Abstract: The concept of ordered g-contraction is introduced, and some fixed and common fixed point theorems for g-nondecreasing ordered g-contraction mapping in partially ordered metric spaces are proved. We also show the uniqueness of the common fixed point in the case of an ordered g-contraction mapping. The theorems presented are generalizations of very recent fixed point theorems due to Golubovi' c et al. (Fixed Point Theory Appl. 2012:20, 2012).
- Keywords: ordered g-contraction; g-nondecreasing; common fixed point; coincidence fixed point; partially ordered metric spaces

Title: Runway Extraction in Low Visibility Conditions Based on Sensor Fusion Method

Author: Changjiang Liu, Qijun Zhao, Yi Zhang, Kokkiong Tan

Sources: IEEE SENSORS JOURNAL, 2014, 14(6):1980-1987 (SCI)

Abstract: This paper presents the design and implementation of a low-cost vision-based system for an aircraft during approach and landing under low visibility. The system is based on combination of multisensor fusion strategy and image processing algorithm, where no expensive equipments, such as millimeter wave radar, are needed. It is aiming to alleviate restrictions in airspace and airport capacity in low visibility conditions by augmenting the naturally existing visual cues. With the fusion approach, pilots are able to identify the runway under low visibility conditions. Keywords: Multi-sensor fusion; synthetic vision; approach; and landing; instrument landing system (ILS); contour tracing

Title: Sensor Fusion Method for Horizon Detection From an Aircraft in Low Visibility Conditions

Author: Changjiang Liu, Yi Zhang, Kokkiong Tan, Hongyu Yang

Sources: IEEE Transactions on Instrumentation and Measurement, 2014, 63(3):620-627 (SCI)

- Abstract: The approach and landing of an aircraft under low visibility has been a subject of great interest in recent years. Although much advanced equipment has been designed and used on airplanes to improve the safety threshold in manipulating it, low visibility has remained the potential threat of causing controlled flight into terrain and runway intrusion. Besides, low visibility is also the main cause for flight delay, which reduces the efficiency of transportation systems. Clear landmarks on the ground will significantly improve pilots' spatial awareness under low visibility conditions, and among all landmarks, horizon position is the key one to count on for successfully controlling an aircraft during landing. The purpose of this paper is to design a horizon detection method based on a multisensor fusion strategy suitable for poor visibility conditions. With the fusion approach, pilots are able to recover/reconstruct the horizon under low visibility conditions. Analysis of experimental results and comparisons with reported methods are furnished at the end of this paper.
- Keywords: Approach and landing; instrument landing; system; multisensor fusion; region growing; synthetic vision

Title: On Blow-Up Structures for a Generalized Periodic Nonlinearly Dispersive Wave Equation

Authors: Ying Wang, Yunxi Guo, Fang Li

Sources: *Mathematical Problems in Engineering*, Volume 2014, Article ID 751949 (SCI)

Abstract: Thelocal well-posedness for a generalized periodic nonlinearly dispersive wave equation is established.Under suitable assumptions on initial value u0, a precise blow-up scenario and several sufficient conditions about blow-up results to the equation are presented.

Title: Stability analysis of fractional order nonlinear systems with delay

Authors: Yu Wang, Tianzeng Li

Sources: *Mathematical Problems in Engineering*, Volume 2014, Article ID 301235, (SCI)

Abstract: Stability analysis of fractional-order nonlinear systems with delay is studied.We

propose the definition of Mittag-Leffler stability of time-delay system and introduce the fractional Lyapunov directmethod by using properties of Mittag-Leffler function and Laplace transform. Then some new sufficient conditions ensuring asymptotical stability of fractional-order nonlinear system with delay are proposed firstly. And the application of Riemann-Liouville fractional-order systems is extended by the fractional comparison principle and the Caputo fractional-order systems. Numerical simulations of an example demonstrate the universality and the effectiveness of the proposed method.

Title: Semi-discrete Schwarz waveform relaxation algorithms for reaction diffusion equations

Author: Shu-Lin Wu, Mohammad D. Al-Khaleel

Sources: BIT Numerical Mathematics, 2014, 54(3):831-866 (SCI)

- Abstract: For time dependent problems, the Schwarz waveform relaxation (SWR) algorithm can be analyzed both at the continuous and semi-discrete level. For consistent space discretizations, one would naturally expect that the semi-discrete algorithm performs as predicted by the continuous analysis. We show in this paper for the reaction diffusion equation that this is not always the case. We consider two space discretization methods—the 2nd-order central finite difference method and the 4th-order compact finite difference method, and for each method we show that the semi-discrete SWR algorithm with Dirichlet transmission condition performs as predicted by the continuous analysis. However, for Robin transmission condition the semi-discrete SWR algorithm performs worse than predicted by the continuous analysis. For each type of transmission conditions, we show that the convergence factors of the semi-discrete SWR algorithm using the two space discretization methods are (almost) equal. Numerical results are presented to validate our conclusions.
- Keywords: Schwarz methods; Waveform relaxation; Semi-discrete; 2nd-order/4th-order finite difference method; 30E10; 65M12; 65M55

Title: New general systems of set-valued variational inclusions involving relative (A, η)-maximal monotone operators in Hilbert spaces

Author: Ting-jian Xiong, Heng-you Lan

Sources: Journal of Inequalities and Applications, 2014:407 (SCI)

Abstract: The purpose of this paper is to introduce and study a class of new general systems of set-valued variational inclusions involving relative (A, η) -maximal monotone operators in Hilbert spaces. By using the generalized resolvent operator technique associated with relative (A, η) -maximal monotone operators, we also construct some new iterative algorithms for finding approximation solutions to the general systems of set-valued variational inclusions and prove the convergence of the sequences generated by the

algorithms. The results presented in this paper improve and extend some known results in the literature.

Keywords: general system of set-valued variational inclusions; relative (A, η)-maximal monotone operator; generalized resolvent operator technique; relative relaxed cocoercive; iterative algorithm; convergence criteria

Title: Iterative algorithms for new general systems of set-valued variational inclusions involving (A, η)-maximal relaxed monotone operators

Author: Ting-jian Xiong, Heng-you Lan

Sources: Journal of Applied Mathematics, Volume 2014, Article ID 698593 (SCI)

- Abstract: We introduce and study a class of new general systems of set-valued variational inclusions involving (A, n)-maximal relaxed monotone operators in Hilbert spaces. By using the general resolvent operator technique associated with (A, n)-maximal relaxed monotone operators, we construct some new iterative algorithms for finding approximation solutions to the general system of setvalued variational inclusion problem and prove the convergence of this algorithm. Our results improve and extend some known results.
- Title: The inverse eigenproblem with a submatrix constraint and the associated approximation problem for (**R**, **S**)-symmetric matrices

Author: Yin Feng; Guo Ke; Huang Guangxin; Huang Bormin

Sources: J. Comput. Appl. Math., 2014, Vol268: 23-33 (SCI)

- Abstract: Let R epsilon R-nxn and S epsilon R-nxn be nontrivial involutions, i.e., R = R-1 not equal +/- I and S = S-1 not equal +/- I. A matrix A epsilon R-nxn is called (R, S)-symmetric if RAS = A. This paper presents a (R, S)-symmetric matrix solution to the inverse eigenproblem with a leading principal submatrix constraint. The solvability condition of the constrained inverse eigenproblem is also derived. The existence, the uniqueness and the expression of the (R, S)-symmetric matrix solution to the best approximation problem of the constrained inverse eigenproblem are achieved, respectively. An algorithm is presented to compute the (R, S)-symmetric matrix solution to the best approximation problem. Two numerical examples are given to illustrate the effectiveness of our results.
- Keywords: Inverse eigenproblem; Approximation problem; (R; S)-symmetric matrix; Leading principal submatrix; Moore-Penrose inverse

Title: Individually and socially optimal joining rules for an egalitarian processor-sharing queue under different information scenarios

Author: Miaomiao Yu, Yinghui Tang, Wenqing Wu

Sources: Computers & Industrial Engineering, 78 (2014) 26 - 32 (SCI)

Abstract: This paper studies joining behavior of customers into an M=M=1 egalitarian

processor-sharing (PS) queue. By constructing a left-multiplication transformation and using its matrix representation, we obtain the expected conditional sojourn time of a tagged customer. Then, in the fully observable case, we first consider the joining strategy in a decentralized manner, that is, arriving customers observe the queue size and then decide whether or not to join the queue based on the net benefit they will obtain upon the completion of service. Secondly, we derive the threshold strategy that will yield the system' s maximal expected profit, to reach the so-called social welfare optimization. Finally, Nash equilibrium and socially optimal mixed strategies are derived in the fully unobservable case. Moreover, some numerical examples are provided to explore the impact of system parameters on customer' s joining behavior.

Keywords: Queueing; Processor-sharing; Joining rules; Conditional sojourn time

Title: Optimal order-replacement policy for a phase-type geometric process model with extreme shocks

Author: Miaomiao Yu, Yinghui Tang, Wenqing Wu, Jie Zhou

Sources: Applied Mathematical Modelling, 38 (2014) 4323 - 4332 (SCI)

- Abstract: A system is subject to random shocks that arrive according to a phase-type (PH) renewal process. As soon as an individual shock exceeds some given level the system will break down. The failed system can be repaired immediately. With the increasing number of repairs, the maximum shock level that the system can withstand will be decreasing, while the consecutive repair times after failure will become longer and longer. Undergoing a specified number of repairs, the existing system will be replaced by a new and identical one. The spare system for the replacement is available only by sending a purchase order to a supplier, and the duration of spare system failures, a new order-replacement policy (also called eK;NT policy) is proposed in this paper. Using the closure property of the PH distribution, the long-run average cost rate for the system is given by the renewal reward theorem. Finally, through numerical calculation, it is determined an optimal orderreplacement policy such that the long-run expected cost rate is minimum.
- Keywords: Shock model; Maintenance; Phase-type distribution; Geometric process; Procurement

Title: Finite groups with few vanishing elements

Author: Jinshan Zhang, Zhencai Shen, Jiangtao Shi

Sources: *GLASNIK MATEMATI*[~]*CKI*, 2014, 49(69):83 – 103 (SCI)

Abstract: Let G be a finite group, and Irr(G) the set of irreducible complex characters of G. We say that an element g 2 G is a vanishing element of G if there exists x in Irr(G) such that x(g) = 0. Let Van(G) denote the set of vanishing elements of G, that is, Van(G) = {g 2 G}

x(g) = 0 for some x 2 Irr(G)}. In this paper, we investigate the finite groups G with the following property: Van(G) contains at most four conjugacy classes of G.

Keywords: Finite groups; characters; vanishing elements

Title: A CHARACTERIZATION OF PROJECTIVE SPECIAL LINEAR GROUP L3(5) BY nse

Authors: Shitian Liu

Sources: Italian Journal of Pure and Applied Mathematics, - N. 32 (2014):202-212 (EI)

Abstract: Let G be a group and $\omega(G)$ be the set of element orders of G. Let $k \in \omega(G)$ and sk be the number of elements of order k in G. Let $nse(G) = \{sk_k \in \omega(G)\}$. In Khatami et al. and Liu's works, the authors proved that the groups L3(2) and L3(4) are unique determined by nse. In this paper, we prove that if G is a group such that nse(G) = nse(L3(5)), then G~=L3(5).

Title: ON THOMPSON'S CONJECTURE FOR ALTERNATING GROUP A26

Author: Shitian Liu, Yanhua Huang

Sources: Italian Journal of Pure and Applied Mathematics, - N. 32 (2014):525-523 (EI)

Abstract: Let G be a group. Denote by N(G) the set of nonidentity orders of conjugacy classes of elements in G. For groups A10, A16 and A22 which are uniquely determined by N(G), theses degrees are p+3 and p+4 is a prime with p = 7, 13, 19. If p+4 is composite, then whether can the groups Ap+3 be characterized by N(G). In this paper, we give an example for Ap+3 with p+4 composite, namely, we proved that if G is a group with trivial center and N(G) = N(A26), then G~A26

Title: A characterization of some groups by their orders and degree patterns

Author: Shitian Liu

Sources: WSEAS TRANSACTIONS on MATHEMATICS, 2014, Volume 13 (EI)

Abstract: Let G be a finite group. Moghaddamfar et al defined the prime graph $\Box(G)$ of group G as follows. The vertices of $\Box(G)$ are the primes dividing the order of G and two distinct vertices p, q are joined by an edge, denoted by p $\sim q$, if there is an element in G of order p • q. Assume $|G| = p_1 1 • • • p_k k$ with P1 < • • • < pk and nature numbers α i with i = 1, 2, • • • , k. For p $\in \pi(G)$, let the degree of p be deg(p) = $|\{q \in \pi(G) | q \sim p\}|$, and D(G) = (deg(p1), deg(p2), • • • , deg(pk)). In this note we give an example showing that S27 is 9-fold OD-characterizable, which gives a negative answer to an open Problem of Yan et al.

Keywords: Order component; Element order; Symmetric group; Degree pattern; Prime graph;

Simple group

Title: Chinese Herbal Medicine Classification Based On BP Neural Network

Author: Changjiang Liu, Xuling Wu, Wei Xiong

Sources: JOURNAL OF SOFTWARE, 2014, 9(4):938-943(EI)

- Abstract: A neural network model for classifying the Chinese herbal medicine based on image feature has been developed. The key process of the approach is to extract medicinal target region (region of interest, ROI). Two different auto-segmentation methods were adopted according to whether there were hollow in the medicinal materials. Subsequently, color, texture and shape feature of ROI was computed. Feature vector composed of forgoing features was input to back propagation neural network (BPN), with the class label as the output of neural network. BPN was trained mutually to classify the medicinal materials. The results of the experiment on 8 kinds of herbal medicine show the algorithms are valid with 98 high precision, with the structure of a 39-12-1 back propagation net.
- Keywords: Chinese herbal medicine (CHM); classification; back propagation neural network (BPN); region growing; image processing

Title: Application of Fractal Fuzzy Set Pair Analysis in Flood Classification

Author: Yun Xia Xie, Shang Chun Zeng, Yu Quan Yuan, Yan Fei Hu

Sources: Advanced Materials Research, 2014, Vol.955-959 (EI)

Abstract: The mathematic theories of traditional flood classification methods are complicated and difficult to calculate. And it is difficult to determine the weights of evaluation index objectively. In this paper the idea of fractal dimension which reflects the target complexity as an index weight is put forward. At the same time paying attention to the fuzzy character of evaluation standard boundary value, the new flood classification method which based on fractal fuzzy set pair analysis is suggested. The suggested method is used in flood classification of the Tuwei River basin (a sub-basin of the Yellow River). The results show that the suggested method is objective, simple and effect, the result of classification is feasible.

Keywords: Flood Classification; Fractal; Fuzzy; Set Pair Analysis

Title: Attribute-based Fine-grained Access Control with User Revocation

Author: Jun Ye, Wujun Zhang, Shu-lin Wu, Yuan-yuan Gao, Jia-tao Qiu

Sources: Second IFIP TC5/8 International Conference, ICT-EurAsia 2014 (EI)

Abstract: Attribute-based encryption brings a lot of convenience for access control. But it introduces several challenges with regard to the user revocation. In this paper, we propose an access control mechanism using new key update technology to enforce access control policies with efficient user revocation capability. The access control can be achieved by

efficient key update technology which takes advantage of the attributebased encryption and key distribution.We demonstrate how to apply the proposed mechanism to securely manage the cloud data. The analysis results indicate that the proposed scheme is efficient and secure in user revocation.

Keywords: Attribute-Based Encryption; Security; Efficient Revocation

Title: Delay Synchronization Controller for Chua's Chaotic Circuits

Author: Liping Zhang, Shu-Lin Wu, Kelin Li

Sources: 2014 11th International Conference on Fuzzy Systems and Knowledge Discovery (EI)

Abstract: In this paper, we present a time delay synchronization controller for the Chua's chaotic circuits. The proposed synchronization controller is very simple because it only impose piecewise linear feedback control on the first solution component. The global asymptotical synchronization criterion is established based on the stability theory of linear systems. Numerical simulations are given to support the theoretical analysis.

Keywords: Chua's circuits; chaos; synchronization control

Title: Robust impulsive lag synchronization of uncertain unified chaotic system with stochastic perturbation

Author: Yang Fang, Kang Yan, Kelin Li

Sources: 2014 10th International Conference on Natural Computation

- Abstract: In this paper, an impulsive controller is designed to achieve exponentially lag synchronization for coupled uncertain unified chaotic systems with stochastic perturbation. Based on a comparison principle for stochastic impulsive systems, driveresponse concept and linear matrix inequality (LMI) approach, several easily verified and realistic sufficient conditions in terms of linear matrix inequalities are derived to guarantee exponentially lag synchronization between the drive system and response system. Moreover, the exponential decay rate has been estimated. A numerical example is provided to validate the effectiveness of the proposed scheme.
- Keywords: Impulsive controller; Uncertain unified chaotic system; Stochastic perturbation; Comparison principle; Linear matrix inequality

Title: Impulsive synchronization of a class of chaotic systems

Author: Yang Fang, Kang Yan, Kelin Li

Sources: Systems Science & Control Engineering: An Open Access Journal, 2014, Vol.2:55-60

Abstract: This paper deals with the impulsive synchronization problem of a class of chaotic

systems. By employing the comparison principle and the linear matrix inequalities approach, some less conservative and easily verified sufficient conditions for impulsive synchronization of this class of chaotic systems are derived, these new sufficient conditions can be applied to analyze the impulsive synchronization of the Chua's oscillators. Moreover, the numerical simulation of Chua's oscillators under impulsive control shows the effectiveness of the proposed theory, and obtains better estimation of the boundary of the stable region than the existing approaches.

Keywords: impulsive synchronization; chaotic system; linear matrix inequality; Chua's oscillators

Title: New iterative algorithms with errors for approximating zeroes of m-accretive operators

Author: Heng-you Lan, Yeol Je Cho

Sources: J. APPLIED FUNCTIONAL ANALYSIS, 2014, VOL. 9, NO.'S 1-2, 153-163,

- Abstract: The purpose of this paper is to construct a new class of iterative sequence with errors and to prove convergence of the iterative sequence with errors to a zero of m-accretive operators in Banach spaces. Our results improve and generalize the corresponding results of recent works.
- Keywords: Uniformly smooth Banach space; iterative algorithm with errors; m-accretive operator; resolvent operator and convergence

Title: Hyperchaos in the fractional-order hyperchaotic Chen system and its synchronization

Author: Tianzeng Li, Yu Wang

Sources: Global Journal of Pure & Applied Science and Technology, 2014

- Abstract: The hyperchaotic behaviors in the fractional order hyperchaotic Chen system are studied in this paper. By using the fractional calculus techniques-predictor-correctors scheme, we give the lowest orders for generating hyperchaos with different control parameter, respectively. Hyperchaos synchronization of the fractional order Chen system is theoretically and numerically studied using the one-way coupling method. The necessary conditions for achieving synchronization of the fractional order Chen system are given by Laplace transform theory. The time required for achieving synchronization and the synchronization effect sensitively depend on the coupling strength. And the optimal value of the coupling strength is given by the numerical simulation. The numerical simulation results demonstrate the effectiveness and the validity of the proposed method.
- Keywords: Laplace transform; synchronization; fractional-order hyperchaotic system; dynamic systems

Title: Fuzzy Inventory Model Based on Activity-based Costing

Author: LIN Xudong, YE Jun, ZHANG Xianjun, HE Li

Sources: International Journal of Applied Engineering Research, 2014, 9(11):1665-1674.

Abstract: This paper studies the problem of the economic order quantity under conditions of quantity discount based on the principle of activity-based costing. Considering the attrition rate and quantity discount, an inventory cost control mod-el is proposed with fuzzy parameters. The optimal order quantity and lead time is given. Finally, a numerical example is given to illustrate the feasibility of using the fuzzy mathematics to solve the inventory problem.

Keywords: Inventory Model; Cost Control; Activity-based Costing; Quantity Discount

Title: A characterization of projective special unitary group U3(5) by nse

Author: Shitian Liu

Sources: Arab Journal of Mathematical Science., 2014, 20(1): 133-140

- Abstract: Let G be a group and $\omega(G)$ be the set of element orders of G. Let $k \in \omega(G)$ and sk be the number of elements of order k in G. Let $nse(G) = \{sk \mid k \in \omega(G)\}$. In Khatami et al. and Liu's works L3(2) and L3(4) are unique determined by nse(G). In this paper, we prove that if G is a group such that nse(G) = nse(U3(5)), then $G \cong U3(5)$.
- Keywords: Element order; Projective special unitary group; Thompson' Problem; Number of elements of the same order

Title: BP neural network models for evaluation systems of wine

Authors: ZISHAN LIU, CHANGJIANG LIU, WEI MAO, HENG-YOU LAN

- Sources: 2014 International Symposium on Fuzzy Systems, Knowledge Discovery and Natural Computation
- Abstract: In order to take the place of the evaluations of professional s to wine and to evaluate wine more objectively, the purpose of this paper is to introduce and study a class of BP neural network models for evaluation systems of wine. We construct a theoretical model of evaluating wine quality based on the physicochemical indexes of wine-grape, and evaluate wine again after the complex relation model shave been learned by applying the BP neural network. The evaluation results is very similar as that of the professionals', which shows that it is feasible and reliable using physicochemical index of wine-grape to evaluate the quality of wine through the BP neural network models.

Title: The Periodicity and the Horseshoes of Continuous Self-maps Authors: Tianxiu Lu, Peiyong Zhu Sources: *Information Technology Journal*, 2014, 13(7): 1451-1454

Abstract: The continuous self-maps on completely densely ordered linear ordered topological spaces (shortly, CDOLOTS) are discussed. This study is the generalization of the ones on the real line. It is pointed that n-chain of intervals implies periodic points with period-n. Then, the following two results are obtained.(1) Period-3 implies arbitrary integer period.(2) Horseshoes implies arbitrary integer period. At last, Sufficient conditions of the existence for periodic points of odd period are obtained.

Keywords: Periodic points; CDOLOTS; horseshoes; continuous self-maps

Title: Response surface analysis with regression models for quantitative evaluation on the quality of wine

Author: Wei Mao, An-ye Chen, Heng-you Lan, Jing Du

Sources: Communications on Applied Nonlinear Analysis, 2014, 21(4):72–80

- Abstract: In this paper, we analyze the correlation of the physicochemical indicators of grapes and wine by using the t-test and analytic hierarchy process. Further, utilizing grey correlation analysis and principal component analysis, we show that the grape's and wine's physicochemical indicators and their aromatic substances which have influence on the quality of wine. Finally, a multiple regression model and response surface analysis are established to analyze the quantitative evaluation on the quality of wine.
- Keywords: Quality of wine; response surface analysis with multiple regression model; principal component analysis; grey correlation analysis, analytic hierarchy process

Title: Existence of Multiple Solutions for a Quasilinear Biharmonic Equation

Author: Wen-Wu Pan, Cheng-En Yu

Sources: International Scholarly Research Notices, Volume 2014, Article ID 370494

Abstract: Using three critical points theorems, we prove the existence of at least three solutions for a quasilinear biharmonic equation.

Title: Existence of multiple solutions for a Dirichlet boundary value problem driven by a p-Laplacian operator t1

Author: Wen-Wu Pan

Sources: Nonlinear Studies, 2014, 21(3): 415-419

Abstract: In this paper we prove the existence of at least three distinct solutions to the following perturbed Dirichlet problem: $\{\nabla (\nabla up - 2\nabla u) = f(x,u) + \lambda g(x,u) \text{ in } \Omega, u = 0 \text{ on } \partial \Omega, \}$ where $\Omega \subset N$ is an open bounded set with smooth boundary $\partial \Omega$ and $\lambda \in$. Under very mild conditions on g and some assumptions on the behaviour of the potential of f at 0 and $+\infty$, our result assures the existence of at least three distinct solutions to the above problem for λ small enough. Moreover such solutions belong to a ball of the space W1, p 0 (Ω) centered in the origin and with radius not dependent on λ .

Title: A NEUMANN BOUNDARY VALUE PROBLEM FOR A CLASS OF GRADIENT SYSTEMS

Authors: Wen-Wu Pan, Lin Li

Sources: *Opuscula Math.* 2014,34(1):171–181

Abstract: In this paper we study a class of two-point boundary value systems. Using very recent critical points theorems, we establish the existence of one non-trival solution and infinitely many solutions of this problem, respectively.

Keywords: Neumann problems; weak solutions; critical points; (p1,...,pn)-Laplacian

Title: Nontrivial Solutions for Dirichlet Boundary Value Systems with the (p1,...pn)-Laplacian

Author: Shang-KunWang ,Wen-Wu Pan

Sources: Journal of Mathematics, Volume 2014, Article ID 505290

Abstract: Using critical point theory due to Bonanno (2012), we prove the existence of at least one nontrivial solution for Dirichlet boundary value systems with the (p1, . . . , pn)-Laplacian.

Title: LMI-Based Synchronization for Uncertain Fractional-Order Chaotic Systems Author: Kang Yan, Yang Fang, Kelin Li

Sources: Communications on Applied Nonlinear Analysis, 2014,21(4):56–71

Abstract: In this paper, we focus on synchronization of uncertain fractional-order chaotic systems. A feedback synchronization method based on a stability theory which introduced by Hu et al. [37] is derived to synchronize the fractional-order chaotic systems. By employing LMI (linear matrix inequality) technique, a novel feedback controller is designed to ensure the asymptotical synchronization conditions. It is worth noticing that the method we proposed has a simple expression form and a wide range in practical applications. Numerical simulations of fractional-order Lorenz system and a hyper chaotic system demonstrate the effectiveness of the proposed scheme.

Keywords: fractional-order; uncertain chaotic system; synchronization; robust control; LMI

Title: A NEW CHARACTERIZATION OF SPORADIC HIGMAN-SIMS AND HELD

GROUPS

Author: Yong Yang, Shitian Liu

Sources: EURASIAN MATHEMATICAL JOURNAL, 2014,5(3):102-116

Abstract: Let G be a group and !(G) be the set of element orders of G. Let k 2 !(G) and sk be the number of elements of order k in G. Let $nse(G) = {sk_k 2 !(G)}$. The projective

special linear groups L3(4) and L3(5) are uniquely determined by nse. In this paper, we prove that if G is a group such that nse(G)=nse(M) where M is a sporadic Higman-Sims or Held group, then G _= M.

Title: A characterization of Sporadic Janko groups J2 and J3

Author: Yong Yang, Zhongwen Ye

Sources: International Journal of Algebra and Statistics, 2014,3(2):46-57

Abstract: Let G be a group and !(G) be the set of element orders of G. Let k 2 !(G) and sk be the number of elements of order k in G. Let nse(G) = fsk_k 2 !(G)g. In Asboei's work, the author proved that J1 is unique determined by nse(G). In this paper, we prove that if G is a group such that nse(G) =nse(H), where H = J2 or J3, then G _ H.

Title: A new characterization of L2(2m) by nse

Author: Yong Yang

Sources: Mathematica Aeterna, 2014, 4(7):769-780

- Abstract: Let G be a group and !(G) be the set of element orders of G. Let $k \in !(G)$ and sk be the number of elements of order k in G. Let $nse(G) = \{sk_k \in !(G)\}$. The groups L2(8) and L2(16) are unique determined by nse(G). In this paper, we prove that if G is a group such that nse(G)=nse(L2(2m)), then G ~L2(2m).
- Keywords: Element order; Projective special linear group; Thompson's problem; Number of elements of the same order

Title: Finite non-solvable groups whose monolithic characters vanish on at most three conjugacy classes

Author: Jinshan Zhang, Guangju Zeng, Zhencai Shen

Sources: South Asian Journal of Mathematics, 2014, 4 (1):57-59

Abstract: The aim of this note is to classify the finite non-solvable groups whose monolithic characters vanish on at most three conjugacy classes in the character table.

Keywords: finite groups; characters; zeros of characters

Title: On zero patterns of characters of finite groups

Authors: Jinshan Zhang, Guangju Zeng, Zhencai Shen

Sources: International Journal of Group Theory, 2014, 3 (4):27-31.

Abstract: The aim of this note is to characterize the _nite groups in which all non-linear irreducible characters have distinct zero entries number.

Title: A Synchronization Controller for Chua's Chaotic Circuits with x|x| Function

Author: LIPING ZHANG, SHULIN WU, KELIN LI

Sources: 2014 International Conference on Electrical, Control and Automation

Abstract: In this paper, we focus on designing an efficient synchronization controller to synchronize two Chua's chaotic circuits with nonsmooth nonlinear term x|x|. A master-slave synchronization scheme of the interested Chua's circuits with a simple feedback control is presented at first and some sufficient criteria for global exponential synchronization are presented based on stability theory of linear dynamical systems. The synchronization controller contains a free parameter g and we given a relationship between this parameter and the exponential synchronization rate. Based on this relationship, the best choice of g can be obtained through numerical optimization. Numerical simulations are provided to illustrate the effectiveness of the proposed synchronization controller.

Title: Products of L2(16) or L2(17) by simple groups

Authors: RUNSHI ZHANG, SHITIAN LIU , YANHUA HUANG

Sources: Mathematical Methods in Finance and Business Administration, 2014: 53-56

- Abstract: In this note, we use Libeck et al's results to find the structure of the finite simple groups G with two subgroups A and B such that G = AB, where A is a non-abelian simple group and B is isomorphic to the projective special linear group L2(16) or L2(17).
- Keywords: Element order; Projective special unitary group; Simple group; Factorization; Alternating group; Linear group

Title: Invariant Einstein Metrics on SU(4)T

Author: 王瑜, 李天增

Sources: 数学进展, 2014, 43(5):781-788(中文核心)

Abstract: We compute non-zero structure constants of the classical full flag manifold M = SU(4)/T with six isotropy summands, then construct the Einstein equation. It is well known that there are 29 SU(4)-invariant Einstein metrics (up to a scale) on M = SU(4)/T. With the help of computer we get all the 29 positive solutions (up to a scale) of the system of Einstein equation for the full flag manifold SU(4)/T, where one is K " ahler-Einstein metric (up to isometry) and three are non-K " ahler-Einstein metrics (up to isometry).

Keywords: generalized flag manifold; Einstein metric; Ricci tensor; isotropy representation

Title: U2(1)×SU(2)上不变爱因斯坦度量 Author: 王瑜,李天增 Sources: *兰州理工大学学报*, 2014, 40(1):164-168 (中文核心) Abstract: 研究广义旗流形SP(3) / Uz(1)×SU(2)上的爱因斯坦度量,应用引理2求其上的非零结构常数,利用计算C-robner基的方法求爱因斯坦方程组的解.得到旗流形SP(3) / U~(1)×S 2)上在差常数倍的情况下有十二个不变的爱因斯坦度量.

Keywords: 广义旗流形; 爱因斯坦度量; r一根

Title: 广义旗流形上不变爱因斯坦度量与结构等测地向量

Author: 王瑜, 李天增

Sources: 四川大学学报(自然科学版), 2014, 51(4):674-680 (中文核心)

Abstract: 满旗流形SU(n) / T上至少有咒! / 2+n+1个不变的爱因斯坦度量, 其中n! / 2个是 KShler爱因斯坦度量. 但当n≥5时关于满旗流形SU(n) / T上不变爱因斯坦度量至今没 有更多的结果。本文得到满旗流形SU(5) / T上在差常数倍的情况下有386个不变的爱 因斯坦度量。这是用度量对满旗流形5U(n) / T(n≥5)进行分类的最新结果. 然后作者 考虑了第二Betti数为1的广义旗流形上结构等测地向量。

Keywords: 广义旗流形; 爱因斯坦度量; 结构等测地向量; Ricci张量; 迷向表示