目　　录

Title: **An Iterative Algorithm for the Generalized Reflexive Solution of the Matrix Equations AXB = E, CXD= F**

Author: Deqin Chen, Feng Yin, and Guang-Xin Huang

Sources: *Journal of Applied Mathematics*, Volume 2012, Article ID 492951, 20 pages (SCI)

Abstract: An iterative algorithm is constructed to solve the linear matrix equation pair *AXB = E, CXD = F* over generalized reflexive matrix *X*. When the matrix equation pair *AXB=E, CXD = F* is consistent over generalized reflexive matrix *X*, for any generalized reflexive initial iterative matrix *X*1, the generalized reflexive solution can be obtained by the iterative algorithm within finite iterative steps in the absence of round-off errors. The unique least-norm generalized reflexive iterative solution of the matrix equation pair can be derived when an appropriate initial iterative matrix is chosen. Furthermore, the optimal approximate solution of *AXB = E, CXD = F* for a given generalized reflexive matrix *X*0 can be derived by finding the least-norm generalized reflexive solution of a new corresponding matrix equation pair $A\tilde{X}B = \tilde{X}$, $C\tilde{X}D = \tilde{F}$ with $\tilde{E} = E - AX_0B$, $\tilde{F} = F - CX_0D$. Finally, several numerical examples are given to illustrate that our iterative algorithm is effective.

Keywords: generalized reflexive initial iterative matrix，linear matrix equation，least-norm generalized reflexive solution

Title: **New approximation-solvability of general nonlinear operator inclusion couples involving (*A*, η, *m*)-resolvent operators and relaxed cocoercive type operators**

Author: H.Y. Lan, Y.S. Cui and Y. Fu

Sources: *Commun. Nonlinear Sci. Numer. Simulat.*, 2012, 17(4): 1844–1851 (SCI、EI)

Abstract: In this paper, we consider and study a class of general nonlinear operator inclusion couples involving (A, η,m)-resolvent operators and relaxed cocoercive type operators in Hilbert spaces. We also construct a new perturbed iterative algorithm framework with errors and investigate variational graph convergence analysis for this algorithm framework in the context of solving the nonlinear operator inclusion couple along with some results on the resolvent operator corresponding to (A, η,m)-maximal monotonicity. The obtained results improve and generalize some well known results in recent literatures.

Keywords: Generalized resolvent operator technique General nonlinear operator inclusion couple (A, η,m)-resolvent operators and relaxed cocoercive type operators New perturbed iterative algorithm framework with errors Variational graphical convergence

Title: **Random iterative algorithms for nonlinear mixed family of random fuzzy and crisp operator equation couples in fuzzy normed spaces**

Author: H.Y. Lan and F. Li

Sources: *J. Comput. Anal. Appl.* , 2012, 14(7): 1345-1353 (SCI)

Abstract: The purpose of this paper is to introduce and study a new class of nonlinear mixed family of random fuzzy and crisp operator equation couples in fuzzy normed spaces based on the random version of the theory of (φ, ψ)-contractor due to Mihet. Further, some new random iterative algorithms for solving this kind of nonlinear operator equation couples in fuzzy normed spaces are constructed and the convergence of iterative sequences generated by the algorithms under joint orbitally complete conditions is proved. As applications, some new common fixed point theorems for a mixed family of fuzzy and crisp operators in fuzzy normed spaces are also given. The results presented in this paper improve and generalize the corresponding results of recent works.

Keywords: Nonlinear mixed family of random fuzzy and crisp operator equation couple, (φ, ψ)-contractor, Joint orbitally complete condition, new random iterative algorithm, approximation and convergence.

Title: **Graphical approximation of common solutions to generalized nonlinear relaxed cocoercive operator equation systems with (A, η)-accretive mappings**

Author: Fang Li, Heng-you Lan, Yeol Je Cho

Sources: *Fixed Point Theory Applications,* 2012, 14:1687-1812 (SCI)

Abstract: In this paper, we develop a new perturbed iterative algorithm framework with errors based on the variational graphical convergence of operator sequences with (A, η)-accretive mappings in Banach space. By using the generalized resolvent operator technique associated with (A, η)-accretive mappings, we also prove the existence of solutions for a class of generalized nonlinear relaxed cocoercive operator equation systems and the variational convergence of the sequence generated by the perturbed iterative algorithm in q-uniformly smooth Banach spaces. The obtained results improve and generalize some well-known results in recent literatures.

Keywords: (A, η)-accretive mapping; Generalized resolvent operator technique; Generalized nonlinear relaxed cocoercive operator equation systems; New perturbed iterative algorithm with errors; Variational graphical convergence

Title: **A General Version of the Short-Tailed Symmetric Distribution**

Author: Fuming Lin, Yingying Jiang

Sources: *Communications in Statistics-Theory and Methods,* 2012, 41(12):2088-2095 (SCI)

Abstract: Motivated by Tiku and Vaughan, we consider a type of distribution which is a generalization of the short-tailed symmetric distribution. In particular, we consider the asymptotic behavior of Mills' ratios for the distribution family. Meanwhile, we obtain the asymptotic distribution of the partial maximum of an independent and identically distributed sequence from the distribution.

Keywords: Extreme value distribution; Generalization of short-tailed symmetric distribution; Mills' ratio; Partial maximum; Student's distribution.

Title: **Some distributional limit theorems for the maxima of Gaussian vector sequences**

Author: Fuming Lin, Daimin Shi, Yingying Jiang

Sources: *Computers and Mathematics with Applications,* 2012, 64: 2497 – 2506 (SCI)

Abstract: In this paper, not only the weak convergence is considered, as in the ASCLT in Theorem 2.3 the a.s. convergence is at stake for extreme-order statistics from the sequences of normal random vectors, which may be stationary or not. In particular, we consider an almost sure limit theorem for the maxima.

Keywords: Weak convergence of extreme-order statistics Almost sure convergence of extreme-order statistics Normal sequence of random vectors

Title: **Overlapping Schwarz methods for reaction diffusion with time-delay**

Authors: Shu-Lin Wu, Cheng-Ming Huang, Ting-Zhu Huang

Sources: *IMA Journal of Numerical Analysis*, 2012, 32(2):632-671 **(**SCI)

Abstract: In this paper we study convergence of the overlapping Schwarz waveform relaxation (OSWR) algorithm for reaction-diffusion equations with time delay. We first prove linear convergence of the algorithm in the continuous case on infinite time intervals at a rate depending on the size of the overlaps, the time-delay argument and the coefficients of the equations. For the special case, i.e., the heat equation with a fixed time delay, the convergence rates of the OSWR algorithm presented in this paper are sharper than the existing results. We then prove that the linear convergence remains valid after spatial discretization and the convergence rates are robust with respect to mesh refinement. The convergence behaviour of the algorithm with an arbitrary number of subdomains is also investigated and it is shown that the convergence rate deteriorates with as number of subdomains increases and ameliorates as the overlap size increases.

Keywords: overlapping Schwarz waveform relaxation; reaction-diffusion equations; time delay; heat equation

Title: **Quasi-optimized Schwarz waveform relaxation algorithms for reaction diffusion equations with time delay**

Authors: Shu-Lin Wu, Cheng-Ming Huang

Sources: *Journal of Mathematical Analysis and Applications*, 2012, 385(1):354-370 **(**SCI)

Abstract: In this paper, we investigate the convergence behavior of the Schwarz waveform relaxation (SWR) algorithms for solving PDEs with time delay. We choose the reaction

diffusion equations with a constant time delay as the underlying model problem and try to derive optimized transmission conditions of Robin type. To this end, we propose a new method to get quasi-optimized parameter involved in the transmission conditions and it is shown that this method is essentially different from the existing ones. Moreover, when the situation is reduced into the heat equations with a constant delay, we show that this method results in a more efficient quasi-optimized parameter. Numerical results are provided to validate our theoretical results.

Keywords: Schwarz waveform relaxation; Reaction diffusion equations; Time delay; Optimization

Title: **Global exponential stability of static neural networks with delay and impulses: Discrete-time case**

Authors: Shu-Lin Wu, Ke-Lin Li, Ting-Zhu Huang

Sources: *Communications in Nonlinear Science and Numerical Simulation*, 2012, 17(10):3947-3960 (SCI)

Abstract: In this paper, we investigate the exponential stability of discrete-time static neural networks with impulses and variable time delay. The discrete-time neural networks are derived by discretizing the corresponding continuous-time counterparts with implicit-explicit-θ (IMEX-θ) method. The impulses are classified into three classes: input disturbances, stabilizing and "neutral" type— the impulses are neither helpful for stabilizing nor destabilizing the neural networks, and then by using a very excellent ideology introduced recently the connections between the impulses and the utilized Lyapunov function are fully explored with respect to each type of impulse. New analysis techniques that used to realize the ideology in discrete-time situation are proposed and it is shown that they are essentially different from the ones used in continuous-time case. Several criteria for global exponential stability of the static neural networks in discrete-time case are established in terms of linear matrix inequalities (LMIs) and numerical simulations are given to validate the obtained theoretical results

Keywords: Discrete-time neural networks; Variable delay; Impulses; LMIs; Exponential stability

Title: **Exponential stability of discrete-time neural networks with delay and impulses**

Authors: Shu-Lin Wu, Ke-Lin Li, Jin-Shan Zhang

Sources: *Applied Mathematics and Computation*, 2012, (218)12:6972-6981 **(**SCI)

Abstract: In this paper, we investigate the exponential stability of discrete-time neural networks with impulses and time-varying delay. The discrete-time neural networks are derived by discretizing the corresponding continuous-time counterparts with different discretization methods. The impulses are classified into three classes: input disturbances, stabilizing and

"neutral" type – the impulses are neither helpful for stabilizing nor destabilizing the neural networks, and then by using the excellent ideology introduced recently by Chen and Zheng [W.H. Chen, W.X. Zheng, Global exponential stability of impulsive neural networks with variable delay: an LMI approach, IEEE Trans. Circuits Syst. I 56 (6) (2009) 1248–1259], the connections between the impulses and the utilized Lyapunov function are fully explored with respect to each type of impulse. Novel techniques that used to realize the ideology in discrete-time situation are proposed and it is shown that they are essentially different from the continuous-time case. Several criteria for global exponential stability of the discrete-time neural networks are established in terms of matrix inequalities and based on these theoretical results numerical simulations are given to compare the capability of different discretization methods

Keywords: Discrete-time neural networks; Variable delay; Impulses; Exponential stability; Discretization methods

Title: **Equigeodesics on Generalized Flag Manifolds with b2(G/K) = 1**

Author: Yu Wang , Guosong Zhao

Sources: Results in Mathematics, 2012, 85(2):35-50 (SCI)

Abstract: In this paper we provide a characterization of structural equigeodesics on generalized flag manifolds with second Betti number $b_2(G/K)=1$, and give examples of structural equigeodesics on generalized flag manifolds of the exceptional Lie groups F_4, E_6 and E_7 with three isotropy summands.

Keywords: generalized flag manifolds; structural equigeodesics; isotropy representation.

Title: **An Iterative Algorithm for the Generalized Reflexive Solutions of the Generalized Coupled Sylvester Matrix Equations**

Author: Feng Yin, Guang-Xin Huang

Sources: *Journal of Applied Mathematics*, 2012(2012):1-28 (SCI)

Abstract: An iterative algorighm is constructed to solve the generalized coupled Sylvester matrix equations $(AXB-CYD, EXF-GYH)=(M,N)$, which includes Sylvester and Lyapunov matrix equations as special cases, over generalized reflexive matrices X and Y. When the matrix equations are consistent, for any initial generalized reflexive matrix pair $[X_1, Y_1]$, the generalized reflexive solutions can be obtained by the iterative algorithm within finite iterative steps in the absence of round-off errors, and the least Frobenius norm generalized reflexive solutions can be obtained by choosing a special kind of initial matrix pair. The unique optimal approximation generalized reflexive solution pair $[\hat{X}, \hat{Y}]$ to a given matrix pair $[X_0, Y_0]$ in Frobenius norm can be derived by finding the least-norm generalized reflexive solution pair$[\widetilde{X}^*, \widetilde{Y}^*]$ of a new corresponding generalized coupled

Sylvester matrix equation pair $(A\tilde{X}B - C\tilde{Y}D, E\tilde{X}F - G\tilde{Y}H) = (\tilde{M}, \tilde{N})$,where $\tilde{M} = M - AX_0B + CY_0D, \tilde{N} = N - EX_0F + GY_0H$. Several numerical examples are given to show the effectiveness of the presented iterative algorithm.

Keywords: Iterative method; Reflexive solution; Generalized reflexive solution ; Generalized coupled Sylvester matrix equations

Title: **Finite iterative algorithms for solving generalized coupled Sylvester systems-Part II: Two-sided and generalized coupled Sylvester matrix equations over reflexive solutions.**

Author: Feng Yin, Guang-Xin Huang, De-Qin Chen

Sources: Applied Mathematical Modelling, 2012, 36(4):1604-1614 （SCI）

Abstract: In Part Ⅰ of this article, we proposed a finite iterative algorithm for the one-sided and generalized coupled Sylvester matrix equations $(AY - ZB, CY - ZD) = (E, F)$ and its optimal approximation problem over generalized reflexive matrices solutions. In Part Ⅱ，an iterative algorithm is constructed to solve the two-sided and generalized coupled Sylvester matrix eqution $(AXB - CYD, EXF - GYH) = (M, N)$, which include Sylvester ad Lyapunov matrix equations as special cases,over reflexive matrices X and Y .When the matrix equations are consistent, for any intial reflexive matrix pair $[X_1, Y_1]$, the reflexive solutions can be obtained by the iterative algorithm within finite iterative steps in the absence of round-off errors, and the least Frobenius norm reflexive solutions can be obtained by choosing a special kind of initial matrix pair. The unique optimal approximation reflexive solution pair $[\hat{X}, \hat{Y}]$ to a given matrix pair $[X_0, Y_0]$ in Frobenius norm can be derived by finding the least-norm generalized reflexive solution pair $[\tilde{X}^*, \tilde{Y}^*]$ of a new corresponding generalized coupled Sylvester matrix equation pair $(A\tilde{X}B - C\tilde{Y}D, E\tilde{X}F - G\tilde{Y}H) = (\tilde{M}, \tilde{N})$,where $\tilde{M} = M - AX_0B + CY_0D, \tilde{N} = N - EX_0F + GY_0H$. Several numerical examples are given to show the effectiveness of the presented iterative algorithm.

Keywords: Iterative method; Generalized reflexive solution; Reflexive solution; Generalized coupled Sylvester matrix equations; Optimal approximate solution

Title: **An Iterative Algorithm for the Least Squares Generalized Reflexive Solutions of the Matrix Equations AXB=E,CXD=F**

Author: Feng Yin, Guang-Xin Huang

Sources: *Abstract and Applied Analysis*, 2012(2012):1-18 (SCI)

Abstract: The generalized coupled Sylvester systems play a fundamental role in wide applications in several areas, such as stability theory, control theory, perturbation analysis, and some other fields of pure ad applied mathematics. The iterative method is a important way to solve the teneralized couplye Sylvester systems. In this paper, an iterative algorithm

is constructed to solvethe minimum Frobenius norm residual problem $\left\|\begin{pmatrix} AXB \\ CXD \end{pmatrix}-\begin{pmatrix} E \\ F \end{pmatrix}\right\| = \min$ over generalized reflexive matrix X. For ay initial generalized reflexive matrix X_1, by the iterative algorithm, the generalized reflexive solution X^* can be obtained within finite iterative steps in the absence of round-off errors, and the unique least-norm generalized reflexive solution X^* can also be derived when an appropriate initial iterative matrix is chosen. Furthermore, the unique optimal approximate solution $\hat{X}$ to a given matrix X_0 in Frobenius norm can be derived by finding the least-norm generalized reflexive solution $\tilde{X}^*$ of a new corresponding minimum Frobeius norm residual problem: $\min\left\|\begin{pmatrix} A\tilde{X}B \\ C\tilde{X}D \end{pmatrix}-\begin{pmatrix} \tilde{E} \\ \tilde{F} \end{pmatrix}\right\|$ with $\tilde{E} = E - AX_0B, \tilde{F} = F - CX_0D$. Finally, several numerical examples are given to illustrate that our iterative algorithm is effective.

Keywords: Iterative Algorithm; Matrix Equations; Generalized Reflexive Solutions; the Least Squares Generalize

Title: **A deteriorating repairable system with stochastic lead time and replaceable repair facility**

Author: Miaomiao Yu, Yinghui Tang, Yonghong Fu, Lemeng Pan, Xiaowo Tang

Sources: *Computers & Industrial Engineering,* 2012, 62(2):609-615 (SCI)

Abstract: In this paper, a deteriorating repairable system with stochastic lead time and replaceable repair facility is studied. We assume that the spare system for replacement is available only by an order and the lead time for delivering the spare follows exponential distribution. Moreover, we also suppose that the repair facility may be subject to failure during the repair period. Under these assumptions, by using the geometric process and the supplementary variable technique, some important reliability indices such as the system availability, rate of occurrence of failure (ROCOF) and the probability that the system is waiting for replacement are derived. An ordering policy N-1 and a replacement policy N based on the number of failures of the system are also considered. Furthermore, employing several Lemmas, the explicit expression of the average cost rate is derived. Meanwhile, the optimum value N⁄ for minimizing the average cost rate could be determined numerically.

Keywords: Geometric process; Supplementary variable technique; Stochastic lead time; Replaceable repair facility; Maintenance policy

Title: **RELIABILITY INDICES OF DISCRETE-TIME Geo^X/G/1 QUEUEING SYSTEM WITH UNRELIABLE SERVICE STATION AND MULTIPLE ADAPTIVE DELAYED VACATIONS**

Author: Yinghui Tang, Miaomiao Yu*, Xi Yun, Shujuan Huang

Sources: *Journal of Systems Science and Complexity*, 2012, 25(6): 1122–1135 (SCI)

Abstract: This paper considers the discrete-time Geo^X/G/1 queueing model with unreliable

service station and multiple adaptive delayed vacations from the perspective of reliability research. Following problems will be discussed: 1) The probability that the server is in a "generalized busy period" at time *n*; 2) The probability that the service station is in failure at time *n*, i.e., the transient unavailability of the service station, and the steady state unavailability of the service station; 3) The expected number of service station failures during the time interval (0, *n*], and the steady state failure frequency of the service station; 4) The expected number of service station breakdowns in a server's "generalized busy period". Finally, the authors demonstrate that some common discrete-time queueing models with unreliable service station are special cases of the model discussed in this paper.

Keywords: Delayed vacation policy; discrete-time queueing model; failure frequency; reliability index; total probability decomposition; unavailability, unreliable

Title: **基于虚实融合的低能见度下航拍图像地平线检测**

Author: 刘长江，张铁，杨红雨

Sources: *四川大学学报(工程科学版)*, 2012, 44(4):110-114 (EI)

Abstract: 地平线检测是飞行器导航系统的控制和稳定性分析中重要的步骤。针对低能见度下低空航拍图像，提出了基于虚实融合的地平线检测算法。首先依据GPS /AHRS 组合导航系统提供的航姿信息，得到地平线的准确斜率及参考位置，然后在该参考位置上方选取种子点区域，根据该区域像素的统计特性计算出阈值，采用区域生长法进行天地分割，最后根据最小误差准则确定地平线的准确位置。文中算法应用于实测数据，实验结果表明算法能有效地提取正确的地平线，能为飞行器在低能见度下进近着陆阶段提供必要的导航信息。

Keywords: 虚实融合；低能见度；地平线检测；区域生长

Title: **Shallow about the Application of Mobile Learning in College for Choosing Classes**

Author: Shunling Chen; Huanglin Zeng; Chongyun Wang; Zhijian Zhou

Sources: *Journal of Communication & Computer*, 2012, 9(2):217

Abstract: Mobile learning is only in recent years the rise of a new special term, has been favored by many people, it is also very concern with prospects. Under the present with high-tech, mobile learning will become essential for students to learn in one of the best learning modes. This paper analyzes the basic characteristics of mobile learning in the students played the role of life, and focuses on its students at the university of elective courses for future study to provide a good platform.

Title: **A New Characterization of Alternating Group A13**

Authors： Shiguang Guo, Shitian Liu ,Wujie Shi

Sources: *Far East Journal of Mathematical Sciences (FJMS)*, 2012, 62(1):15-28

Abstract: Let G be a finite group and let nse(G) be the set of numbers of elements with the same order in G. In this note, we prove that, a finite group G is isomorphic to A13 , the alternating group A13 of degree 13, if and only if G = A13 and nse(G) = nse(A13).

Keywords: finite group; insoluble group; simple group; order of elements

Title: **New iterative procedures with errors of common fixed points for multivalued contraction mappings in Banach spaces**

Author: H.Y. Lan, J. Li and Y.J. Cho

Sources: *Panamer. Math. J.* , 2012, 22(1): 47-56

Abstract: In this paper, we introduce and study a new class of Mann and Ishikawa iteration processes with errors of common fixed points for two multivalued contraction mappings, and we prove some convergence theorems of the iteration sequences for multivalued contraction mappings by using approximation method in Banach spaces. The obtained results improve and generalize some well known results in recent literatures.

Keywords: New iteration processes, Common fixed point, Multivalued contraction mapping, Convergence.

Title: **On hybrid (*A*, η, *m*)-proximal point algorithm frameworks for solving general operator inclusion problems**

Author: H.Y. Lan

Sources: *J. Appl. Funct. Anal.*, 2012, 7(3): 258-266

Abstract: The purpose of this paper is to introduce and study a new class of hybrid (*A, η,m*)-proximal point algorithms with errors for solving general nonlinear operator inclusion problems in Hilbert spaces based on (*A, η,m*)-monotonicity framework. Furthermore, by using the generalized resolvent operator technique associated with the (*A, η,m*)-monotone operators, we discuss the approximation solvability of the operator inclusion problems and the convergence rate of iterative sequences generated by the algorithm.

Keywords: (*A, η,m*)-monotonicity, hybrid (*A, η,m*)-proximal point algorithm, nonlinear operator inclusion problem, generalized resolvent operator technique, convergence rate.

Title: **On Over-relaxed Proximal Point Algorithms for Generalized Nonlinear Operator Equation with (A,η,m)-monotonicity Framework**

Author: Fang Li

Sources: *International Journal of Modern Nonlinear Theory and Application.* 2012, 1(3) :67-72

Abstract: In this paper, a new class of over-relaxed proximal point algorithms for solving nonlinear operator equations with (A,η,m)-monotonicity framework in Hilbert spaces is introduced and studied. Further, by using the generalized resolvent operator technique associated with the (A,η,m)-monotone operators, the approximation solvability of the operator equation problems and the convergence of iterative sequences generated by the algorithm are discussed. Our results improve and generalize the corresponding results in the literature.

Keywords: New over-relaxed proximal point algorithm; nonlinear operator equation with (A,η,m)-monotonicity framework; generalized resolvent operator technique; solvability and convergence.

Title: Over-relaxed (A, η)-proximal point algorithm framework for approximating the solutions of operator inclusions

Author: Fang Li, Hengyou Lan

Sources: *Adv. Nonlinear Var. Inequal*, 2012, 15(1): 99-109

Abstract: The purpose of this paper is to introduce and study the over-relaxed (A,η)-proximal point algorithm framework for approximating the solutions of operator inclusions by using generalized resolvent operator technique associated with the (A,η)-monotone op-erators and means of two different methods. Further, some special cases and some open questions are given.

Keywords: Words and Phrases;. Over-relaxed (A,η)-proximal point algorithm framework; operator inclusion; generalized resolvent operator technique; approximation solvability.

Title: **A new characterization of A12**

Author: Shitian Liu, Runshi Zhang

Sources: *Math.sci.*, 2012, 6:30

Abstract: We proved that a finite group G is isomorphic to A_{12} if |A|=| A_{12} | and nse(G)=nse(A_{12})

Keywords: finite group, insoluble group, simple group, orders of elements

Title: **A characterization of L2(16)**

Author: Shitian Liu

Sources: *Wulfenia*, 2012, 19(11): 291-298

Abstract: We proved that a finite group G is isomorphic to L2(16) if nse(G)=nse(L2(16))

Keywords: element order, linear group, nse, Thompson' conjecture

Title: **finite groups with weakly c*-normal subgroups**

Author: Shitian Liu, Runshi Zhang

Sources: *B SO MA S S*, 2012, 1(2):130-140

Abstract: A subgroup H is called to be weakly * c -normal in a group G if there exists a subnormal subgroup K of G such that HK is s-quasinormally embedded in G and $K \cap H$ is s-quasinormally embedded in G. In this paper, we discuss p-nilpotence of finite groups G with the property that certain subgroups of a Sylow p-subgroup P of G are weakly c* -normal in N (P) G . Our results are a generalization of some previous ones'.

Keywords: Weakly * c -normality; Soluble; p-nilpotence; s-quasinormally embedded

Title: **A new characterization of L5(2)**

Author: Shitian Liu

Sources: Archives Des Sciences 2012, 65(11): 42-48

Abstract: Let G be a group and ω (G) be the set of element orders of G. Let $k \in \omega(G)$ and m_k be the number of elements of order k in G. Let nse(G) =$\{ m_k \| m_k \in \omega$ (G)$\}$. In this note, we prove that Thompson's Conjecture is true for L5(2), where L5(2) is the projective special linear group of degree 5 over the finite field of order 2.

Keywords: element order, linear group, nse, Thompson’ conjecture

Title: **A characterization of projective special linear group L4(13)**

Author: Shitian Liu

Sources: SAJM 2012, 2(2): 111-118

Abstract: There is an intimate relation between non-abelian simple groups G and noncommuting graphs ∇(G). Abdollahi et al. put forward a conjecture called AAM’s Conjecture in as follows: If M is a finite nonabelian simple group and G is a group such that ∇(G) $\cong \nabla$ (M), then G$\cong$M. In this paper, we prove that this conjecture is true for L4(13).

Keywords: non-abelian simple groups, noncommuting graphs, element orders

Title: **A fixed point theorem for set-valued mapping in normed space**

Author: Xiao-lan Liu Fengzhou

Sources: *Research Journal of Pure Algebra*, 2012, 2(5):129-134.

Abstract: We present a fixed point theorem for set-valued theorem in completed normed space. In this paper, we introduce the notion of the distance between two sets, i. e, Horsdorff-distance, and provide an proof for the fixed point theorem which says that if a linear mapping defined on a open ball of a completed normed space X satisfies some conditions without compactness assumptions on the domain and range sets, then it has a

fixed point on the same open ball.

Keywords: A fixed point theorem; normed space; linear operator; Horsdorff-distance.

Title: **Strict feasibility of pseudo-monotone variational inequality**

Author: Xiao-lan Liu

Sources: *International Journal of Pure and Applied Mathematics,* 2012, 78(3):323-330.

Abstract: In Hilbert spaces of possibly infinite dimension, this paper proves that the solution set of variational inequality being nonempty and bounded is equivalent to the strict feasibility of the solution set, assuming that the mapping is a compact field and pseudo-monotone in the sense of S.Karamardian, by the invariance under homotopy of the degree and the excision property of the degree. This generalizes some known results from finite dimensional spaces to infinite dimensional spaces in general, and the provided that condition of the mapping is weaker than that in the literature.

Keywords: variational inequality, degree theory, strictly feasible, compact field, pseudomonotone mapping

Title: **Existence of three solutions for a 2-dimensional Navier problem**

Author: Wen-Wu Pan ,Lin Li

Sources: *NONLINEAR STUDIES - www.nonlinearstudies.com, 2012,*19(4):599-606

Abstract: In this paper, the existence of at least three weak solutions for Navier problem $\begin{cases} \Delta(\|\Delta u\|\Delta u) = \lambda f(x,u) + \mu g(x,u), & in\Omega \\ u = \Delta u = 0, & on\partial\Omega \end{cases}$ Where $\Omega \subset \mathbb{R}^2$ is non-empty bounded open set with smooth boundary $\partial\Omega$, $\lambda, \mu \in [0,+\infty)$ and $f, g: \Omega \times \mathbb{R} \to \mathbb{R}$ are L^1-Carathéodory functions, is established. The approach is based on variational methods and critical points.

Keywords: Three solutions; Critical point; Multiplicity results; Navier problem.

Title: **Existence of Three Solutions for a Boundary Value Problem in the One-Dimensional Case**

Author: Wenwu Pan and Lin Li

Sources: *Advances in Dynamical Systems and Applications, 2012,* 7(2): 243–247

Abstract: In this paper, we establish the existence of at least three solutions to a Navier boundary problem involving the biharmonic equation. The technical approach is mainly base on a three critical points theorem of B. Ricceri.

Keywords: Biharmonic; three critical points theorem.

Title: **Finite Groups with weakly S-semipermutably embedded subgroups**

Author: Zhencai Shen, Jinshan Zhang, Shulin Wu

Sources: *International Electronic Journal of Algebra,* 2012 (11):111-124

Abstract: A subgroup H of G is said to be S-quasinormal in G if H permutes with every Sylow subgroup of G. This concept was introduced by Kegel in 1962 and has been investigated by many authors. A subgroup H is called S-semipermutable in G if H permutes with every Sylow p-subgroup of G for which $(p, |H|) = 1$. A subgroup H of the group G is said to be c-normal in G if there is a normal subgroup B of G such that $HB = G$ and $H\cap B$ is normal in G. Next, we unify and generalize the above concepts and give the following concept: A subgroup H of the group G is said to be weakly S-semipermutably embedded in G if there is a subnormal subgroup B of G such that $HB = G$ and $H\cap B$ is S-semipermutable or S-quasinormally embedded in G. Groups with certain weakly S-semipermutably embedded subgroups of prime power order are studied.

Keywords: weakly S-semipermutably embedded subgroup; p-nilpotent group; supersolvable group; formation

Title: **Invariant Einstein Metrics on Full Flag Manifolds**

Author: Yu Wang , Tianzeng Li

Sources: *Research Journal of Pure Algebra,* 2012, 2(7):1-10

Abstract: We compute non-zero structure constants of generalized flag manifolds. Then construct the Einstein equation, using the command Nsolve in mathematics we get all the positive solutions (up to a scale) for, where one is Kähler Einstein metrics (up to isotropy) and the other two are non- Kähler Einstein metrics (up to isotropy).

Keywords: Einstein metric; Ricc tensor; generalized flag manifold; isotropy representation.

Title: **Multi-layer and Multi-objective Criteria Decision-Making Model with Preference Information**

Author: Jun Ye , Xianjun Zhang

Sources: *International Journal of Applied Engineering Research,* 2012, 7(12): 1371-1378

Abstract: A practical multilayer multiple criteria decision-making model is proposed by using the deviation method of minimum membership degree with preference information, the decision tree and dynamic programming. The advantages of the objective factors and subjective factors, and a variety of evaluation are considered in this paper. This makes the model closer to the actual. Then, a practical example is given to show the feasibility of the model.

Keywords: Preference Information; Method of minimum membership degree; Decision Tree; Dynamic programming

Title: **Finite simple groups with number of zeros slightly Greater than the number of nonlinear irreducible characters**

Author: Guangju Zeng

Sources: *International Jo urnal of Group Theory*, 2012, 1(4):25-32

Abstract: The aim of this paper is to classify the finite simple groups with the number of zeros at most seven greater than the number of nonlinear irreducible characters in the character tables. We find that they are exactly A_5, $L_2(7)$and A_6.

Keywords: Finite groups, characters; zeros of characters

Title: **A new characterization of A_{26} by their element orders**

Author: Guangju Zeng ,Wenjun Xu

Sources: *Applied Mathematics Elixir Appl.math*, 2012, 42:6352-6354

Abstract: Given an arbitrary finite group G，denote by $\varpi(G)$ the set of its elemengt orders. The group G is said to be recognizable by the set $\varpi(G)$ if the equality $\varpi(G)=\varpi(H)$ implies an isomorphism of G and H for each finite group H.For a prime $p\geq 5$，the alternating groups A_p，A_{p+1}，A_{p+2} are recognizable. But for A_{p+3} are has not known. In paper ，we will give an example for $p+3$ not a prime，namely，that A_{26} is characterizable.

Keywords: Finite group; Alternating group; Element order.

Title: **Noncommuting graph characterization of the projective special unitary group $U_4(9)$**

Author: Guangju Zeng, Wenjun Xu, Shitian Liu

Sources: *Research Journal of Pure Algebra*, 2012, 2(1):1-12

Abstract: There are intimate relations between nonabelian simple groups G and Noncomuting graphs $\nabla(G)$.Abdollahi et al.put forward a conjecture called *AAM's* Conjecture in as follows：If M is a finite nonabelian simple and G is a group such that $\nabla(G)\cong\nabla(M)$，then $G\cong M$.In this paper，we prove That this conjecture is true for the projective special unitary group $U_4(9)$

Keywords: Nonabelian simple groups; Noncommuting graphs; Elements orders; Projective special unitary groups.

Title: Algebraic encoding and protein secondary structure prediction

Author: Haiyan Zhang,Jinshan Zhang,Zaixin Li

Sources: *International Journal of Algebra.* 2012, 6(20):975-984

Abstract: In order to compare orthogonal encoding, five bye encoding, codon encoding (two) and profile encoding to find out their virtues and shortcomings, we carefully studied them

with artificial neural network. Results indicate that profile encoding that preserves the redundant evolutionary information gets higher predictive performance. The experimental results show that combining profile encoding and orthogonal encoding can get highest precision of prediction.

Keywords: Algebraic encoding; Protein structure prediction; Neural network

Title: **Characterizations of some groups by their sizes of the subset of pairwise non-commuting elements**

Author: Runshi Zhang, Deqin Chen, Shitian Liu

Sources: *JP Journal of Algebra, Number Theory and Applications, 2012*, 24(2):125-135

Abstract: In this note, we characterize a non-soluble group G such that $\omega(G) \le 91$,where 91 is the size of pairwise non-commuting elements of A_6 .

Keywords: non-commuting elements ; non-soluble group

Title: **Projection Iterative methods of extended general Variational inequalities**

Author: Runshi Zhang, Deqin Chen

Sources: *International Journal of Pure and Applied Sciences and Technology*, 2012, 8(2):39-46

Abstract: It is well known that the nonconvex variational inequalities are equivalent to the fixed point problems. We use this equivalent alternative formulation to suggest and analyze a new class of two-step iterative methods for solving the nonconvex variational inequalities using the technique of projection operator. We also discuss the convergence of the iterative method under partially strongly monotonicity, which is a weaker condition than cocoerciveness. Our method of proof is very simple.

Keywords: Variational inequalities; Nonconvex sets; Iterative method; Convergence

Title: **A generalization of Hahn-Banach theorem**

Author: Feng Zhou , Xiao lan Liu

Sources: *Research Journal of Pure Algebra* ,2012, 2(1):13- 18

Abstract: We present a generalization of Hahn-Banach extension theorem. In this paper, we introduce the notion of s -convex function, and provide an proof for the new version of the Hahn-Banach theorem which says that if a linear operator defined on a subspace x_0 of a real vector space x is dominated by a s -convex function defined on x , then it has a linear extension which is also dominated by the same s -convex operator defined on x .

Keywords: Hahn-Banach theorem; linear subspaces; s -convex function.

Title: **On Bergman Spaces with Logarithmic Weights and Composition Operators**

Author: Feng Zhou, Zhi Jie Jiang

Sources: *Applied Mathematical Sciences*, 2012, 6(61-64):3037-3050

Abstract: Let B_N denote the open unit ball in the N-dimensional complex Euclidean space. Let $\varphi : B_N \to$ D be a holomorphic map. In this paper we obtain some properties of the Bergman space with logarithmic weight in B_N, and we prove that the bounded and compact composition operator $C_\varphi : f \to f \circ \varphi$ from Bloch-type space in B_1 to Bergman space in B_N with logarithmic weight are equivalent.

Keywords: Bergman spaces with logarithmic weights; Bloch-type spaces; composition operations; Carleson measures

Title: **A Vertex Algebra Structure on the Representation V_Q of Untwisted Affine Lie Algebra $\widetilde{Sl(n,\mathbb{C})}$**

Author: Yu Wang , Tianzeng Li

Sources: *信阳师范学院学报*, 2012, 25(4):1-7 (中文核心)

Abstract: The vertex operator structure on the representation V_Q of untwisted affine algebra associated with $\widetilde{Sl(n,\mathbb{C})}$ is studied by using the representation theory of Lie algebra. Moreover, it is proved that V_Q is a vertex operator algebra according to calculus methods of formal distributions, and then the conformal vector on the vertex algebra V_Q is given.

Keywords: vertex operator; vertex algebra; n-th product

Title: **匿名性比较的信息熵偏差模型**

Author: 叶俊，丁勇，刘忆宁，曹建宇

Sources: *计算机工程与应用*., 2012, 48(13):67- 70 (中文核心)

Abstract: 匿名性是很多协议都会用到的一种属性，但是如何来对匿名性进行量化和对匿名程度进行比较，目前还没有一个准确的数学模型。基于信息熵理论提出了将匿名性量化后进行比较的信息熵偏差模型。该模型能够用于不同的系统之间匿名性的比较，并且根据各个节点对系统的影响，客观、合理地给出了各个节点的权重。举例说明了模型的实用性，并且与其他模型进行比较说明了该模型的优越性。

Keywords: 匿名性；信息熵；偏差；比较模型

Title: **左右逆特征值问题及其最佳逼近问题的对称矩阵解**

Author: 尹凤，黄光鑫

Sources: *成都理工大学学报(自科版)*, 2012, 39(5):559-562 (中文核心)

Abstract: 令 $R \in C^{m\times m}$ 和 $S \in C^{n\times n}$ 是两个非平凡卷积矩阵，即 $R = R^{-1} \neq \pm I_m$，且 $S = S^{-1} \neq \pm I_n$. 如果一个矩阵 $A \in C^{m\times n}$ 满足 $RAS = A$，则矩阵 A 称为 $(R,S)-$对称矩阵，本文首先分别给出了左右逆特征值问题的 $(R,S)-$对称矩阵解的可解条件和一般表达

式；然后，给出了左右逆特征值问题相应的最佳逼近问题的(R,S)–对称矩阵解.

Keywords: 左右逆特征值问题; 最佳逼近问题; (R,S)–对称矩阵; Moore-Penrose 逆

Title：**泰勒公式在高等数学中的若干应用**
Authors： 杜道渊
Sources：北京电力高等专科学校学报, 2012, 29(11):383-383

Title：**球域内 Poisson 方程 Numann 问题解的积分表达式**
Authors：郭时光
Sources：四川理工学院学报, 2012, 25(1):90-92

Title：**格蕴涵代数与 Heyting-代数之间的关系**
Authors： 白利军，齐磊磊
Sources：兰州石化职业技术学院学报，11（03）：71-73

Title：**震荡原理及其应用**
Authors：郭时光
Sources：西昌学院学报, 2012, 26(2):42-43

Title：**半平面 Poisson 方程边值问题分析**
Authors：郭时光
Sources：河北北方学院学报, 2012, 28(4) :7-8

Title：**圆域外 Poisson 方程 Numann 问题解的积分表达式**
Authors：郭时光
Sources：宜宾学院学报, 2012, 12(6):19-20

Title：**线性代数教材基础部分编写创新探索**
Authors：郭时光
Sources：内江科技, 2012, 33(9):52

Title：半空间的电势问题分析
Authors：郭时光
Sources： 黑龙江科技信息,2012, 24(8):97

Title：线性代数应用编写纲要
Authors：郭时光
Sources： 内江科技, 2012, 33(9):58

Title：**Banach** 空间中向量优化问题解集的刻画
Authors：李柳芬
Sources： 四川理工学院学报, 2012, 6

Title：向量优化问题解集的刻画
Authors：李柳芬
Sources： 应用泛函分析学报, 2012, 4

Title：基于新课程标准的数学课堂教学评价
Authors：李泽军
Sources： 科技风, 2012, 6

Title：用 **E** ≥ 证明一类级数部分和不等式
Authors： 罗静
Sources： 四川理工学院学报,2012, 6

Title：人口的预测和控制模型
Authors： 王光清
Sources： 四川理工学院学报, 2012, 25(6):373-375

Title：论“预阅式”教学法在我校高等数学中的作用
Authors： 余成恩
Sources：中国对外贸易, 2012, 537(10):261

Title：关于 **Lagrange** 中值定理的四种非常证法
Authors： 余成恩
Sources：科技视界, 2012, 44(29):157

Title：自贡市房价走势分析
Authors：周锋
Sources：科技信息, 2012, 1