

Chapter II

Program

1. OVERVIEW
2. DETAILED SCHEDULE

1. OVERVIEW

PROGRAM

International Hall

	Aug. 6 (Wed)	Aug. 7 (Thur)	Aug. 8 (Fri)	Aug. 9 (Sat)
08:00-08:30	Opening Remarks	☕ Coffee & Tea	☕ Coffee & Tea	☕ Coffee & Tea
08:30-09:15	PT Bernd Sturmfels	PT Andreas Frommer	PT Yongdo Lim	PT Vladimir Sergeichuk
09:15-10:00	PT Peter Benner	PT Stephane Gaubert	PT Panayiotis Psarrakos	PT Tin-Yau Tam
10:00-10:30	☕ Coffee Break	☕ Coffee Break	☕ Coffee Break	☕ Coffee Break
10:30-12:10	MS I & CT I	MS III & CT III	MS IV & CT IV	MS V & CT V
12:10-14:00	🍴 Lunch	🍴 Lunch	Group Photo (12:10-12:20) 🍴 Box Luncheon (12:20-13:00) 6F, 600th Anniversary Hall Excursion (13:00-18:30) 🍴 Banquet (19:00-21:00) 5F, 600th Anniversary Hall	🍴 Lunch
14:00-14:45	PT Dario Bini	PT Ravindra Bapat		MS VI & CT VI
14:45-15:30	PT Shaun Fallat	PT Chi-Kwong Li		Closing Remarks
15:30-16:00	☕ Coffee Break	☕ Coffee Break		PT : Plenary Talk MS : MiniSymposia CT : Contributed Talk
16:00-17:40	MS II & CT II	ILAS Membership Business Meeting		
18:00-20:00	ILAS Board Meeting			

SCHEDULE of Invited MiniSymposia(IMS), Contributed MiniSymposia(CMS) and Contributed Talks(CT)

Room		Aug. 6 (Wed)		Aug. 7 (Thur)	Aug. 8 (Fri)	Aug. 9 (Sat)		
		10:30-12:10	16:00-17:40	10:30-12:10	10:30-12:10	10:30-12:10	14:00-15:40	
International Hall	1F	90110	IMS 1	IMS 1	IMS 1	IMS 5	IMS 5	
		90109	IMS 3	CMS 1	IMS 3	IMS 7	IMS 7	
		90104	IMS 4	IMS 4	IMS 6	IMS 6	IMS 6	
	2B	9B218	IMS 8	IMS 8	IMS 8	CMS 8	CMS 8	CMS 8
		9B217	IMS 2	IMS 2	IMS 2	CMS 5	CMS 5	CMS 5
		9B215	CT 2	CT 5	CT 8	CT 12	CT 16	CT 20
		9B208	CT 1	CT 4	CT 7	CT 11	CT 15	CT 19
	3B	9B321	CMS 4	CMS 10	CMS 4	CMS 13	CMS 13	CMS 13
		9B320			CMS 3	CMS 3	CMS 3	
		9B318	CT 3	CT 6	CT 9	CT 13	CMS 14	
		9B316			CT 10	CT 14	CT 17	CT 18
		9B313	CMS 6	CMS 6	CMS 11	CMS 11	CMS 7	CMS 7
		9B312	CMS 2	CMS 12	CMS 12	CMS 9	CMS 9	CMS 9

2. DETAILED SCHEDULE

Wednesday, Aug. 6.

INTERNATIONAL HALL

07:30-08:00 ☛ Coffee & Tea (1F, Lounge)

08:00-08:30 Opening Remarks (2B, 9B217)

08:30-10:00 Plenary Talks I (2B, 9B217), Chair : Richard A. Brualdi

08:30-09:15 Bernd Sturmfels, *Beyond Linear Algebra*09:15-10:00 Peter Benner, *Solving Large-Scale Matrix Equations: Recent Progress and New Applications*

10:00-10:30 ☛ Coffee Break (1F, Lounge)

10:30-12:10 Mini Symposia I (parallel)

IMS 1 (1F, 90110), Combinatorial Problems in Linear Algebra (Chair : Richard A. Brualdi)10:30-10:55 Rachel Quinlan, *Skew-symmetric nilpotent spaces in characteristic 2*10:55-11:20 Steve Butler, *Results on principal rank sequences*11:20-11:45 Liliana Costa, *The skeleton of acyclic Birkhoff polytopes*11:45-12:10 Daniel Horsley, *Extending Fisher's inequality to coverings***IMS 2 (2B, 9B217), Matrix Inequalities (Chair : Fuzhen Zhang)**10:30-10:55 Tsuyoshi Ando, *Matrix inequalities involving partial traces*10:55-11:20 Rajendra Bhatia, *Spreads of matrices: a new look at an old problem*11:20-11:45 Man-Duen Choi, *Non-linear inequalities for positive linear maps on matrix algebras*11:45-12:10 Fumio Hiai, *Anti Lie-Trotter formula***IMS 3 (1F, 90109), Spectral Theory of Graphs and Hypergraphs (Chair : Vladimir S. Nikiforov)**10:30-10:55 Joshua Cooper, *Homogeneous adjacency spectra of random hypergraphs*10:55-11:20 Renata Del Vecchio, *Laplacian integrality in P_4 -sparse graphs*11:20-11:45 Shenglong Hu, *Spectral symmetry of uniform hypergraphs*11:45-12:10 Liying Kang, *Extremal graph theory based on the p -spectral radius***IMS 4 (1F, 90104), Tensor Eigenvalues (Chair : Liqun Qi)**10:30-10:55 Jia-Yu Shao, *Some spectral properties and characterizations of connected odd-bipartite uniform hypergraphs*10:55-11:20 Lihua You, *Some results on the primitive degree of tensors*11:20-11:45 Changjiang Bu, *A note on e -cospectral hypergraphs*11:45-12:10 Changqing Xu, *Copositive Hankel tensors, completely positive Hankel tensors, and their eigenvalues***IMS 8 (2B, 9B218), Toeplitz Matrices and Operators (Chair : Torsten Ehrhardt)**10:30-10:55 Yang Chen, *An elementary derivation of the mid-gap probability of the finite n Gaussian unitary ensembles*10:55-11:20 Victor Didenko, *Kernels and cokernels of Toeplitz plus Hankel operators*11:20-11:45 Torsten Ehrhardt, *On the inversion of Toeplitz-plus-Hankel bezoutians*11:45-12:10 Alexei Karlovykh, *Toeplitz operators on locally bounded Orlicz sequence spaces***CMS 2 (3B, 9B312), Inverse Spectral Problems (Chair : Carlos M. Fonseca)**10:30-10:55 Wayne Barrett, *The extended inverse eigenvalue problem for undirected graphs*10:55-11:20 Natalia Bebiano, *The inverse field of values problem*11:20-11:45 Kazem Ghanbari, *Inverse eigenvalue problems for pentadiagonal matrices*11:45-12:10 Thomas Laffey, *Classical polynomials in the nonnegative inverse eigenvalue problem*

CMS 4 (3B, 9B321), Teaching Linear Algebra (Chair : Ajit Kumar)

10:30-10:55 Sang-Gu Lee, *E-book, mobile linear algebra laboratory, random problem generator and teaching linear algebra*

10:55-11:20 Avi Berman, *Definitions are important I the case of linear algebra*

11:20-11:45 Ajit Kumar, *Interactive linear algebra using mathdisk*

CMS 6 (3B, 9B313), Linear Least Squares and Applications (Chair : Yimin Wei)

10:30-10:55 Marc Baboulin, *Using condition numbers to assess numerical quality in least squares HPC applications*

10:55-11:20 Ken Hayami, *Modulus iterative methods for box constrained least squares problems*

11:20-11:45 Sanzheng Qiao, *Hybrid method for lattice basis reduction*

11:45-12:10 Miroslav Rozložnik, *Numerical behavior of indefinite orthogonalization*

10:30-12:10 Contributed Talks I (parallel)**CT 1 (2B, 9B208), Chair : Frank Hansen**

10:30-10:55 Kiam Heong Kwa, *Geometry of per-alternate triangular matrices*

10:55-11:20 Pan Shun Lau, *Convexity of linear images of real matrices with prescribed singular values and sign of determinant*

11:20-11:45 Tanvi Jain, *Approximation problems in the Riemannian metric on positive definite matrices*

CT 2 (2B, 9B215), Chair : Froilan M. Dopico

10:30-10:55 Nikolai Krivulin, *Direct Algebraic Solutions to Tropical Optimization Problems*

10:55-11:20 Peter Chang-Yi Weng, *Solving large-scale nonsymmetric algebraic Riccati equations by doubling*

11:20-11:45 Shih-Feng Shieh, *A structure-preserving flow for symplectic matrix pairs and its dynamics*

11:45-12:10 Wenzhe Wang, *On block triangular matrices with signed Drazin inverse*

CT 3 (3B, 9B318), Chair : Amir Niknejad

10:30-10:55 Xiaofan Zhao, *Symmetric pairs in Yetter-Drinfeld categories over weak Hopf algebras*

10:55-11:20 Yuki Seo, *On three geometric means of positive definite matrices*

11:20-11:45 Zuzana Nemcova, *Convex sets in max-Lukasiewicz algebra*

11:45-12:10 Hamed Najafi, *Generalized Heinz type inequality*

12:10-14:00 ☪ Lunch**14:00-15:30 Plenary Talks II (2B, 9B217), Chair : Leslie Hogben**

14:00-14:45 Dario Bini(LAA Lecurer), *Exploiting matrix structures in polynomial eigenvalue problems: computational issues*

14:45-15:30 Shaun Fallat(Taussky-Todd Lecturer), *On the eigenvalues of positive matrices: In the spirit of Taussky Unification*

15:30-16:00 ☪ Coffee Break (1F, Lounge)**16:00-17:40 Mini Symposia II (parallel)****IMS 1 (1F, 90110), Combinatorial Problems in Linear Algebra (Chair : Geir Dahl)**

16:00-16:25 Louis Deaett, *The minimum rank problem for circulant graphs*

16:25-16:50 Hein Van der Holst, *On the inertia set of signed graphs that have a 1-separation*

16:50-17:15 Zejun Huang, *The maximum number of nonzero entries in special 0-1 matrices*

17:15-17:40 Hwa Kyung Kim, *Completion to an alternating sign matrix*

IMS 2 (2B, 9B217), Matrix Inequalities (Chair: Fuzhen Zhang)

16:00-16:25 Masatoshi Ito, *Relations among relative operator entropies and operator divergences*

16:25-16:50 Ren-Cang Li, *Classical min-max principles and beyond*

16:50-17:15 Minghua Lin, *Inequalities related to positive semidefinite 3-by-3 block matrices*

17:15-17:40 Ramazan Turkmen, *Majorization and matrix inequalities*

IMS 4 (1F, 90104), Tensor Eigenvalues (Chair : Jia-Yu Shao)16:00-16:25 Michael K. Ng, *Irreducible tensors, primitive tensors and directed hypergraphs*16:25-16:50 Xiying Yuan, *The p -spectral radius of k -partite and k -chromatic uniform hypergraphs***IMS 8 (2B, 9B218), Toeplitz Matrices and Operators (Chair : Torsten Ehrhardt)**16:00-16:25 Yuriy Karlovych, *C^* -algebras of Bergman type operators*16:25-16:50 Markus Seidel, *On semi-Fredholm infinite matrices*16:50-17:15 Ilya Spitkovsky, *On Toeplitz operators with triangular monomial almost periodic matrix symbols*17:15-17:40 Stefano Serra-Capizzano, *The GLT class as a generalized Fourier analysis and applications***CMS 1 (1F, 90109), Structured Matrix Equations (Chair : Eric King-wah Chu)**16:00-16:25 Delin Chu, *A linear equation approach for incremental linear discriminant analysis*16:25-16:50 Eric Chu, *Solving tensor linear equations*16:50-17:15 Hung-Yuan Fan, *Iterative methods for solving large-scale generalized Lyapunov/Stein and rational Riccati equations***CMS 6 (3B, 9B313), Linear Least Squares and Applications (Chair : Marc Baboulin)**16:00-16:25 David Titley-Peloquin, *Differentiating the method of conjugate gradients*16:25-16:50 Yimin Wei, *Statistical condition estimates and randomized algorithms for large-scale total least squares problems***CMS 10 (3B, 9B321), Matrix Methods in Computational Systems Biology and Medicine (Chair : Konstantin Fackeldey)**16:00-16:25 Natasa Conrad, *Modeling real-world systems using networks*16:25-16:50 Adam Nielsen, *Finding the nearest reversible Markov chain*16:50-17:15 Amir Niknejad, *Matrix methods in metabolic networks*17:15-17:40 Marcus Weber, *Linear algebraic approaches to Markov chain analysis other than spectral clustering***CMS 12 (3B, 9B312), Generalized Matrix Inverses and Applications (Chair : Jeffrey Hunter)**16:00-16:25 Jianlong Chen, *Generalized invertibility of differences and products of idempotents (projections) in rings*16:25-16:50 Lizhu Sun, *Some results on drazin inverse of anti-triangular matrices with sign analysis*16:50-17:15 Hihul Zhu, *TBA***16:00-17:40 Contributed Talks II (parallel)****CT 4 (2B, 9B208), Chair : Hana Kim**16:00-16:25 Daryl Granario, *Sums of ϕ_S -orthogonal matrices*16:25-16:50 Kennett Dela Rosa, *S -orthogonal matrices as products of symmetries*16:50-17:15 Naomi Shaked-Monderer, *SPN completable graphs*17:15-17:40 Suleyman Solak, *On applications of hyper-Fibonacci numbers in matrices***CT 5 (2B, 9B215), Chair : Jiang Qian**16:00-16:25 Andrea Marchesini, *Asymptotic eigenvalue problems*16:25-16:50 Heike Fassbender, *On complex J -symmetric eigenproblems*16:50-17:15 Jiang Zhou, *Line star sets for Laplacian eigenvalues*17:15-17:40 Kanae Akaiwa, *Convergence to multiple eigenvalues in the quotient-difference algorithm***CT 6 (3B, 9B318), Chair : Tom Laffey**16:00-16:25 Juan M. Pena, *Accurate computations for classes of matrices related to Total Positivity*16:25-16:50 Leonardo Robol, *A new class of block companion matrices related to matrix polynomials*16:50-17:15 M. Javad Nadjafi-Arani, *A double counting by using matrix method for computing k^{th} coefficient of Wiener polynomial*17:15-17:40 Makoto Namiki, *On the inside of hidden P -matrix sandwiches***18:00-20:00 ILAS Board Meeting (2F, 90212)**

Thursday, August 7

INTERNATIONAL HALL

08:00-08:30 ■ Coffee & Tea (1F, Lounge)

08:30-10:00 Plenary Talks III (2B, 9B217), Chair : Stephen Kirkland

08:30-09:15 Andreas Frommer (SIAG/LA Lecturer), *Arnoldi approximation for matrix functions: how to restart and when to stop*

09:15-10:00 Stephane Gaubert, *From tropical linear algebra to zero_sum games*

10:00-10:30 ■ Coffee Break

10:30-12:10 Mini Symposia III (parallel)

IMS 1 (1F, 90110), Combinatorial Problems in Linear Algebra (Chair : Richard A. Brualdi)

10:30-10:55 Carlos Marijuan, *Polynomial functions preserving the nonnegativity of matrices*

10:55-11:20 Geir Dahl, *Majorization for partially ordered sets*

IMS 2 (2B, 9B217), Matrix Inequalities (Chair : Minghua Lin)

10:30-10:55 Mitsuru Uchiyama, *From a general theorem to concrete operator inequalities*

10:55-11:20 Eun-Young Lee, *Unitary orbits and decompositions of positive matrices*

11:20-11:45 Fuzhen Zhang, *A matrix decomposition and its applications*

11:45-12:10 Christopher Hillar, *Tight bounds on the infinity norm of inverses of symmetric diagonally dominant positive matrices*

IMS 3 (1F, 90109), Spectral Theory of Graphs and Hypergraphs (Chair : Vladimir S. Nikiforov)

10:30-10:55 Vladimir Nikiforov, *Spectral methods for extremal problems in hypergraphs*

10:55-11:20 Vilmar Trevisan, *Laplacian energy among threshold graphs*

11:20-11:45 Maria Freitas, *Bounds on the entries in the principal eigenvector of the distance signless Laplacian matrix*

IMS 6 (1F, 90104), Riordan Arrays and Related Topics (Chair : Louis W. Shapiro)

10:30-10:55 Paul Barry, *Riordan arrays, generalized Narayana triangles, and series reversion*

10:55-11:20 Gi-Sang Cheon, *Some combinatorial applications of the q -Riordan matrix*

11:20-11:45 I-Chiau Huang, *Riordan bases*

11:45-12:10 Tian-Xiao He, *Two linear operators defined on Riordan group and their applications*

IMS 8 (2B, 9B218), Toeplitz Matrices and Operators (Chair : Torsten Ehrhardt)

10:30-10:55 Evgeny Tyrtshnikov, *Additional structures in Toeplitz-like matrices*

10:55-11:20 Jani Virtanen, *Toeplitz operators on generalized fock spaces*

CMS 3 (3B, 9B320), Matrix Geometry (Chair : Miklos Palfia)

10:30-10:55 Zheng Qu, *The contraction rate in Thompson's part metric of an order preserving flow on a cone*

10:55-11:20 Ben Jeuris, *Barycenters of structured matrices and their computation*

11:20-11:45 Sejong Kim, *The least squares mean of probability measures for positive definite matrices*

11:45-12:10 Gabriel Larotonda, *Convex bodies and optimizers in matrix geometry*

CMS 4 (3B, 9B321), Teaching Linear Algebra (Chair : Abraham Berman)

10:30-10:55 Natanael Karjanto, *Project-based learning in linear algebra through embedded librarianship*

10:55-11:20 Fuzhen Zhang, *Do we really know the angles between vectors (spaces)?*

11:20-11:45 Chang kyun Noh, *Embodeid approach to the concept of vector and its application*

11:45-12:10 Sepideh Stewart, *Teaching linear algebra with clickers in three worlds of embodied, symbolic and formal mathematical thinking*

CMS 11 (3B, 9B313), Solution of Sylvester-like Equations and Canonical Forms (Chair : Stefan Johansson)

- 10:30-10:55 Gerald Bourgeois, *The matrix equation $XA - AX = F(X)$ and the Sylvester-like and Riccati-like equations*
- 10:55-11:20 Chun-Yueh Chiang, *A note on Sylvester-like equations*
- 11:20-11:45 Froilan Dopico, *Sylvester equations and the matrix symmetrizer problem*
- 11:45-12:10 Fernando De Terán, *The equations $AX + BX^* = O$, $AX + X^*B = O$ and $AX + X^*A = O$: analogies and differences*

CMS 12 (3B, 9B312), Generalized Matrix Inverses and Applications (Chair : Minerva Catral)

- 10:30-10:55 Oskar Maria Baksalary, *On a generalized core inverse*
- 10:55-11:20 Xuzhou Chen, *A new algorithm for computing moore-penrose inverse using Gauss-Jordan elimination*
- 11:20-11:45 Jeffrey Hunter, *The computation of the group inverse and related properties of Markov chains via perturbations*
- 11:45-12:10 Quan-Lin Li, *A unified computation for performance analysis of stochastic models through generalized inverses*

10:30-12:10 Contributed Talks III (parallel)**CT 7 (2B, 9B208), Chair : Louis Deaett**

- 10:30-10:55 Ahmad Mojallal, *On Laplacian Energy of graphs*
- 10:55-11:20 Carlos Da Fonseca, *On the maximal length chain in the Bruhat order for a class of binary matrices*
- 11:20-11:45 Zhihua Zhang, *Characterisation of matrix entropies*
- 11:45-12:10 Chassidy Bozeman, *Minimum Rank of Graphs with Loops*

CT 8 (2B, 9B215), Chair : Hung-Yuan Fan

- 10:30-10:55 Javier Perez, *Backward stability of polynomial root-finding using Fiedler companion matrices*
- 10:55-11:20 Jieyong Zhou, *Convergence criteria of iterative methods for singular linear equations*
- 11:20-11:45 Jong-Hyeon Seo, *Estimating the Convergence Rates of Functional Iterations for Solving Quadratic Matrix Equations*
- 11:45-12:10 Maria Isabel Garcia-Planas, *Disturbance Decoupling Problems for Switched Linear Systems. A Geometric Approach*

CT 9 (3B, 9B318), Chair : Delin Chu

- 10:30-10:55 Richard Cimler, *Simulation models with max-linear functions*
- 10:55-11:20 Sang-Hyup Seo, *The newton and the fixed point iterations for differentiable order-convex matrix functions*
- 11:20-11:45 Thomas Mach, *Computing Approximate Rational Krylov Subspaces Without Explicit Inversion*
- 11:45-12:10 Pudji Astuti, *Characteristic non-hyperinvariant subspaces and the characteristic hull of subspaces*

CT 10 (3B, 9B316), Chair : Sejong Kim

- 10:30-10:55 Alicia Roca, *The number of characteristic non hyperinvariant subspaces*
- 10:55-11:20 Daowei Lu, *Cleft module cocategory*
- 11:20-11:45 Ji Gao, *Metricity and n -dimensional u -convexity in banach spaces*
- 11:45-12:10 Katarzyna Kozłowska, *Riemann-Hilbert problems and their applications related to the asymptotics of Toeplitz determinants*

12:10-14:00 🍴 Lunch**14:00-15:30 Plenary Talks IV (2B, 9B217), Chair : Fuzhen Zhang**

- 14:00-14:45 Ravindra Bapat (LAMA Lecturer), *Squared distance matrix of a tree*
- 14:45-15:30 Chi-Kwong Li, *Some matrix techniques, results, and problems in quantum information science*

Program

Thur. Aug. 7.

15:30-16:00 ■ Coffee Break (1F, Lounge)

16:00-18:00 ILAS Membership Business Meeting (2B, 9B217)

Friday, August 8

INTERNATIONAL HALL

08:00-08:30 ☛ Coffee and Tea (1F, Lounge)

08:30-10:00 Plenary Talks V (2B, 9B217) Chair : Rajendra Bhatia

08:30-09:15 Yongdo Lim, *Monotonicity of the Karcher mean*

09:15-10:00 Panayiotis Psarrakos, *Travelling from matrices to matrix polynomials*

10:00-10:30 ☛ Coffee Break (1F, Lounge)

10:30-12:10 Mini Symposia IV (parallel)

IMS 5 (1F, 90110), Quantum Information and Computing (Chair : Yiu Tung Poon)

10:30-10:55 Marybeth Ruskai, *Bounds on concavity of quantum entropy*

10:55-11:20 Gergo Nagy, *Transformations on density operators preserving quantum f -divergences*

11:20-11:45 Shengjun Wu, *Reveal quantum correlation via mutually unbiased bases*

11:45-12:10 Sarah Plosker, *Reinterpreting majorization and trumping to study entanglement theory*

IMS 6 (1F, 90104), Riordan Arrays and Related Topics (Chair : Gi-Sang Cheon)

10:30-10:55 Hana Kim, *Profiles of a class of ordered trees with a mutation*

10:55-11:20 Ana Luzon, *Groups of finite Riordan matrices*

11:20-11:45 Donatella Merlini, *On the A -matrix of Riordan arrays*

11:45-12:10 Manuel Alonso Moron, *Non-Archimedean metrics on the rings of formal power series: some applications*

IMS 7 (1F, 90109), Nonnegative Matrices and Generalizations (Chair : Judi McDonald)

10:30-10:55 Daniel Szyld, *Nearly positive matrices*

10:55-11:20 Leslie Hogben, *Eventual properties related to nonnegativity*

11:20-11:45 Minerva Catral, *Potentially eventually exponentially positive sign patterns*

11:45-12:10 Marie MacCaig, *Integer solutions to systems of equations in max-algebra*

CMS 3 (3B, 9B320), Matrix Geometry (Chair : Takeaki Yamazaki)

10:30-10:55 Jimmie Lawson, *The least-squares mean and probability on NPC-metric spaces*

10:55-11:20 Lajos Molnar, *Isometries and isomorphisms of spaces of positive definite and unitary matrices*

11:20-11:45 Miklos Palfia, *Operator monotone functions in several variables*

CMS 5 (2B, 9B217), Algebraic Combinatorics and Combinatorial Matrices (Chair : Han Hyuk Cho)

10:30-10:55 Jihoon Choi, *On the matrix sequence $\{\Gamma(A^m)\}_{m=1}^{\infty}$ for a Boolean matrix a whose digraph is linearly connected*

10:55-11:20 Sen-Peng Eu, *Variances and determinantal profiles of orientations*

11:20-11:45 Masao Ishikawa, *Selberg integrals and evaluations of Pfaffians*

11:45-12:10 Kyoung-Tark Kim, *Criteria for the existence of a Jordan-Chevalley-Seligman decomposition*

CMS 8 (2B, 9B218), Eigenvalue Computations and Applications (Chair : Reng-Cang Li)

10:30-10:55 Jiang Qian, *Computing derivatives of repeated eigenvalues and corresponding eigenvectors of quadratic eigenvalue problems*

10:55-11:20 Yueh-Cheng Kuo, *Structure-preserving doubling algorithm for large-scale nonlinear matrix equations*

11:20-11:45 Matthew Lin, *A fast numerical algorithm for constructing nonnegative matrices with prescribed real eigenvalues*

11:45-12:10 Zhongming Teng, *A block Chebyshev-Davidson method for linear response eigenvalue problems*

CMS 9 (3B, 9B312), Inequalities in Matrices, Operators, and Lie Groups (Chair : Natalia Bebiano)10:30-10:55 Mohammad Sal Moslehian, *Some inequalities involving positive maps*10:55-11:20 Luke Oeding, *Relations among principal minors of symmetric matrices*11:20-11:45 Masatoshi Fujii, *Some refinements of operator inequalities*11:45-12:10 Ghadir Sadeghi, *Some inequalities on noncommutative probability spaces***CMS 11 (3B, 9B313), Solution of Sylvester-like Equations and Canonical Forms (Chair : Stefan Johansson)**10:30-10:55 Stefan Johansson, *Stratifications of structured matrix pencils. Part II: generalized state-space systems*10:55-11:20 Andrii Dmytryshyn, *Stratifications of structured matrix pencils. Part I: skew-symmetric and symmetric cases*11:20-11:45 Quoc Phong Vu, *Simultaneous solutions of matrix and operator Sylvester equations and functions of commuting matrices*11:45-12:10 Qing-Wen Wang, *Systems of coupled generalized Sylvester matrix equations***CMS 13 (3B, 9B321), Sign Pattern Matrices (Chair : Zhongshan Li)**10:30-10:55 Avi Berman, *Zero forcing for sign patterns*10:55-11:20 Shaun Fallat, *Zero forcing and vertex coverings*11:20-11:45 Wei Gao, *Sign patterns and point hyperplane configurations*11:45-12:10 Frank J. Hall, *Sign patterns of g -matrices***10:30-12:10 Contributed Talks IV (parallel)****CT 11 (2B, 9B208), Chair : Takashi Sano**10:30-10:55 Hye-Yeon Kim, *Iterative Methods solving matrix equation $X^p - MXM^T = Q$* 10:55-11:20 Javier Gonzalez, *Projection methods for large T -Sylvester equations*11:20-11:45 Liping Zhang, *Homotopy for Rational Riccati Equations arising in Stochastic Control***CT 12 (2B, 9B215), Chair : Mandeep Singh Rawla**10:30-10:55 Joao Cardoso, *The matrix arithmetic-geometric mean iteration and the computation of the matrix logarithm*10:55-11:20 Matthias Bolten, *Analysis of grid transfer operators for multigrid methods based on Toeplitz matrices*11:20-11:45 Pappur Shivakumar, *Hearing the shape of a drum with a hole*11:45-12:10 Noemi De Castro, *Enumerating feedback classes of locally Brunovsky systems***CT 13 (3B, 9B318), Chair : Mary Clair Thompson**10:30-10:55 Mojtaba Bakherad, *Some reverses of Cauchy-Schwarz inequality*10:55-11:20 Priyanka Grover, *Birkhoff-James orthogonality of matrices*11:20-11:45 Volha Kushel, *On the positive stability of P^2 -matrices***CT 14 (3B, 9B316), Chair : Vilmar Trevisan**10:30-10:55 Marianne Akian, *Tropical bounds for eigenvalues of matrices using Hungarian dual variables*10:55-11:20 Marta Pena, *Closed orbits in planar bimodal linear systems*11:20-11:45 Miman You, *Constructing New Braided T -categories over Monoidal Han-Hope algebra*11:45-12:10 Ralph De la Cruz, *The generalized Cartan-Dieudonne theorem***12:10-12:20 Group Photo (1F, Lounge)****12:15-13:00 ☞ Box luncheon(provided by Elsevier) for all participants (6F, Faculty Club, 600th Anniversary Hall)****13:00-18:30 Excursion : Seoul City Tour and DMZ Tour(Buses start at 13:00 in front of the International Hall)****19:00-21:00 ☞ Banquet (5F, 600th Anniversary Hall)**

Saturday, August 9

INTERNATIONAL HALL

08:00-08:30 ☛ Coffee and Tea (1F, Lounge)

08:30-10:00 **Plenary Talks VI (2B, 9B217), Chair: Man-Duen Choi**

08:30-09:15 Vladimir Sergeichuk, *Classification problems for systems of forms and linear mappings*

09:15-10:00 Tin-Yau Tam, *Some matrix asymptotic results and their Lie counterparts*

10:00-10:30 ☛ Coffee Break (1F, Lounge)

10:30-12:10 **Mini Symposia V (parallel)**

IMS 5 (1F, 90110), Quantum Information and Computing (Chair : Chi-Kwong Li)

10:30-10:55 Raphael Loewy, *On the extreme points of quantum channels*

10:55-11:20 Mikio Nakahara, *Recursive construction of noiseless subsystem for qudits*

11:20-11:45 Nung-Sing Sze, *Conditions for degradability of tripartite quantum states*

11:45-12:10 Yiu Tung Poon, *Quantum convex support and maximum entropy inference*

IMS 6 (1F, 90104), Riordan Arrays and Related Topics (Chair : Donatella Merlini)

10:30-10:55 Emanuele Munarini, *Jensen-like identities*

10:55-11:20 Louis W. Shapiro, *Riordan group survey*

11:20-11:45 Renzo Sprugnoli, *New and revisited problems on Riordan arrays*

11:45-12:10 Sheng-Liang Yang, *On the half of a Riordan array*

IMS 7 (1F, 90109), Nonnegative Matrices and Generalizations (Chair : Judi McDonald)

10:30-10:55 Sergei Sergeev, *On sets of eigenvalues of matrices with prescribed row sums and prescribed graph*

10:55-11:20 Bit-Shun Tam, *Nonnegative square roots of nonnegative matrices*

11:20-11:45 Dmitrii Logofet, *Perron-Frobenius theory in matrix population models: a primary role of the second positive eigenvalue*

CMS 3 (3B, 9B320), Matrix Geometry (Chair : Miklos Palfia)

10:30-10:55 Takeaki Yamazaki, *A converse of Loewner-Heinz inequality and applications to operator means*

10:55-11:20 Frank Hansen, *Regular operator mappings and multivariate geometric means*

11:20-11:45 Toan Ho, *Interpolation functions and matrix means*

11:45-12:10 Hosoo Lee, *Moving averages on positive definite cones*

CMS 5 (2B, 9B217), Algebraic Combinatorics and Combinatorial Matrices (Chair : Jang Soo Kim)

10:30-10:55 Sangwook Kim, *Flags of lattice path matroid polytopes*

10:55-11:20 Suh-Ryung Kim, *Competition graphs and matrices*

11:20-11:45 Boram Park, *Matrix decompositions induced by competition-realizable pairs*

11:45-12:10 Seunghyun Seo, *Enumeration of $(0, 1)$ -matrices avoiding some 2×2 matrices*

CMS 7 (3B, 9B313), Generalized Laplacian and Green Matrices (Chair : A. Carmona)

10:30-10:55 Milica Andelic, *Sufficient conditions for positive definiteness of tridiagonal matrices revisited*

10:55-11:20 Victor Anandam, *Laplace operator and its perturbation in a finite non-symmetric network*

11:20-11:45 Andres M. Encinas, *Dirichlet-to-Robin maps on finite networks*

11:45-12:10 Silvia Gago, *The green matrix of a network with a new vertex*

CMS 8 (2B, 9B218), Eigenvalue Computations and Applications (Chair : Reng-Cang Li)

- 10:30-10:55 Chern-Shuh Wang, *A relaxation strategy for computing low-rank approximate solutions of large-scale algebraic Riccati*
- 10:55-11:20 Weichung Wang, *Parallel eigensolvers in simulations of three-dimensional photonic crystals*
- 11:20-11:45 Wei-guo Wang, *Backward error and conditioning for the generalized eigenproblem*
- 11:45-12:10 Leihong Zhang, *Backward perturbation and residual-based error bounds for the linear response eigenvalue problem*

CMS 9 (3B, 9B312), Inequalities in Matrices, Operators, and Lie Groups (Chair : Tin-Yau Tam)

- 10:30-10:55 Takashi Sano, *Matrices on indefinite inner product spaces*
- 10:55-11:20 Hanyu Li, *New rigorous perturbation bounds for the LU and QR factorizations*
- 11:20-11:45 Juri Morishita, *Kwong matrices and operator monotone functions on $(0, 1)$*
- 11:45-12:10 Mandeep Singh Rawla, *Generalized operator version of Bernoulli's inequality*

CMS 13 (3B, 9B321), Sign Pattern Matrices (Chair : Frank Hall)

- 10:30-10:55 Zhongshan Li, *Sign vectors of subspaces and minimum ranks of sign patterns*
- 10:55-11:20 Chin-Hung Lin, *Reduction identities of the minimum rank on loop graphs*
- 11:20-11:45 Yue Liu, *A forbidden structure of ray nonsingular matrices*
- 11:45-12:10 Jin-Woo Park, *Sign idempotent sign pattern matrices that allow idempotence*

CMS 14 (3B, 9B318), Recent Developments in Linear Preserver Problems (Chair : LeRoy Beasley)

- 10:30-10:55 LeRoy Beasley, *Linear preservers: then and now*
- 10:55-11:20 Wai Leong Chooi, *Linear spaces and preservers of bounded rank-two per-symmetric triangular matrices*
- 11:20-11:45 B. Kuzma, *Commutativity preservers*
- 11:45-12:10 Seok-Zun Song, *Linear preservers of Boolean rank between different matrix spaces*
- 12:10-12:35 Ngai-Ching Wong, *Orthogonally additive and zero product preserving holomorphic maps of matrices*

10:30-12:10 Contributed Talks V (parallel)**CT 15 (2B, 9B208), Chair : Quoc Phong Vu**

- 10:30-10:55 Xiaohui Zhang, *Making the Yetter-Drinfeld categories in to ribbon categories*
- 10:55-11:20 Yorick Hardy, *Towards a multiplicative Kronecker quotient*
- 11:20-11:45 Yuji Nakatsukasa, *Linearization for computing roots of rational functions*
- 11:45-12:10 Daniil Stefonishin, *Formulas and estimates for the generic rank of tensors*

CT 16 (2B, 9B215), Chair : Natanael Karjanto

- 10:30-10:55 Agah Garnadi, *Inclusion identification in inverse boundary value problems on weighted networks*
- 10:55-11:20 Huihui Zhu, *Centralizers and Their Applications to Generalized Inverses*
- 11:20-11:45 Pengpeng Xie, *The numerical range of a real tensor*

CT 17 (3B, 9B316), Chair : Chun-Yueh Chiang

- 10:30-10:55 Esteban Segura Ugalde, *A contour integral approach to study invariant pairs*
- 10:55-11:20 Hana Tomaskova, *Optimization with max-linear functions*
- 11:20-11:45 Hanni Garminia, *The integrality of hypergraphs costrong product*
- 11:45-12:10 James Hook, *Max-plus singular values*

12:10-14:00 🍴 Lunch**14:00-15:40 Mini Symposia VI (parallel)****CMS 5 (2B, 9B217), Algebraic Combinatorics and Combinatorial Matrices (Chair : Seungjin Lee)**

- 14:00-14:25 Hwanchul Yoo, *Factorizations in Schubert cells of affine Grassmannian*
- 14:25-14:50 Meesue Yoo, *Schur coefficients of the integral form Macdonald polynomials*
- 14:50-15:15 Soichi Okada, *Restricted Littlewood formulae and minor summation formula*
- 15:15-15:40 Han Hyuk Cho, *M-step competition graphs of digraphs*

CMS 7 (3B, 9B313), Generalized Laplacian and Green Matrices (Chair : A. M. Encinas)14:00-14:25 Woong Kook, *Applications of combinatorial laplacians*14:25-14:50 Margarida Mitjana, *Green function of multiperiodic linear chains***CMS 8 (2B, 9B218), Eigenvalue Computations and Applications (Chair : Reng-Cang Li)**14:00-14:25 Yunfeng Cai, *A polynomial eigenproblem approach for general joint block diagonalization*14:25-14:50 Tsung-Ming Huang, *Singular value decompositions for single-curl operators in three-dimensional Maxwell's equations for complex media***CMS 9 (3B, 9B312), Inequalities in Matrices, Operators, and Lie Groups (Chair : Tin-Yau Tam)**14:00-14:25 Sangjib Kim, *A partial order on hyperbolic elements*14:25-14:50 Mary Clair Thompson, *Various results on determinants of matrix sums*14:50-15:15 Dinh Trung Hoa, *A reverse powers-stormer inequality***CMS 13 (3B, 9B321), Sign Pattern Matrices (Chair : Hein van der Holst)**14:00-14:25 Kevin Vander Meulen, *Spectrally arbitrary pattern extensions*14:25-14:50 Michael Young, *The maximum nullity and zero forcing number of complete subdivision graphs*14:50-15:15 Ling Zhang, *TBA***14:00-15:40 Contributed Talks VI (parallel)****CT 18 (3B, 9B316), Chair : J. Virtanen**14:00-14:25 James McTigue, *Maximal non-singular partial matrices*14:25-14:50 Leo Taslaman, *Why does shift-and-invert Arnoldi work?*14:50-15:15 M. Eulalia Montoro, *Characteristic non hyperinvariant subspaces***CT 19 (2B, 9B208), Chair : Ana Luzon**14:00-14:25 Ji-Hwan Jung, *New orthogonal q -Sheffer sequences*14:25-14:50 Sung-Tae Jin, *An equivalence class of the generating functions and application to solving functional equations*14:50-15:15 Minh Song, *On the commutator subgroup of the Riordan group***CT 20 (2B, 9B215), Chair : Seok-Zun Song**14:00-14:25 Jan Hamhalter, *Jordan isomorphisms as preservers for important orders on matrix and operator algebras*14:25-14:50 Gangyong Lee, *Rudimentary subrings of partial matrix rings***15:40-16:00 Closing Remarks (2B, 9B217)**

Program