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Electrical
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PRINCETON

Plenary Speakers



Andrew Odlyzko **Economics and Technology in the Evolution of Networks**

Technology is providing a growing range of choices for future networks. Which ones will be deployed will depend largely on economics. For example, IMS and NGN appear to be motivated primarily by the desire of service providers to gain more control and more revenues, as opposed to a horizontal structure of the industry that would relegate them to simple connectivity providers. Some of the main economic factors that play a role in telecommunications decisions will be surveyed and speculations on how competing interests will be accommodated will be presented.

Andrew Odlyzko is Director of the interdisciplinary Digital Technology Center and Interim Director of the Minnesota Supercomputing Institute, both at the University of Minnesota. Prior to moving to Minnesota in 2001, he devoted 26 years to research and research management at Bell Labs and AT&T Labs. He has written over 150 technical papers and has three patents. He has managed projects in diverse areas, such as security, formal verification methods, parallel and distributed computation, and auction technology. In recent years he has also been working on electronic publishing, electronic commerce, and economics of data networks. All his recent papers as well as further information can be found on his home page at <http://www.dtc.umn.edu/~odlyzko>.



Richard Baraniuk **Compressive Sensing**

This talk will overview the recent work on compressive sensing, a new approach to data acquisition in which analog signals are digitized for processing not via uniform sampling but via measurements using more general, even random, test functions. In stark contrast with conventional wisdom, the new theory asserts that one can combine “low-rate sampling” with digital computational power for efficient and accurate signal acquisition. Compressive

sensing systems directly translate analog data into a compressed digital form; all we need to do is “decompress” the measured data through an optimization on a digital computer. The implications of compressive sensing are promising for many applications and enable the design of new kinds of analog-to-digital converters, cameras, and imaging systems.

Richard G. Baraniuk is the Victor E. Cameron Professor of Electrical and Computer Engineering Department at Rice University. His research interests lie in new theory, algorithms, and hardware for sensing and signal processing. His work on the Rice single-pixel compressive camera has been widely reported in the popular press and was selected by MIT Technology Review as a TR10 Top 10 Emerging Technology for 2007. He is a Fellow of the IEEE and has received national young investigator awards from the National Science Foundation and the Office of Naval Research, the Rosenbaum Fellowship from the Isaac Newton Institute of Cambridge University, the ECE Young Alumni Achievement Award from the University of Illinois, and the Wavelet Pioneer Award from SPIE. He has received the George R. Brown Award for Superior Teaching at Rice three times and the C. Holmes MacDonald National Outstanding Teaching Award from Eta Kappa Nu, and was selected as one of Edutopia Magazine’s Daring Dozen Education Innovators in 2007. His non-profit open-access educational publishing project Connexions (cnx.org) was a Tech Museum of Innovation Laureate in 2006.



David Tse **Information Theory of Wireless Networks**

An information theory of wireless networks is one of the grand challenges of the field. But 30 years of sustained effort in network information theory has produced exact capacity results only for the simplest of networks. We present two recent approaches to approximate the capacity of general networks in regimes which are meaningful in the wireless context. The first approach focuses on the interference-limited regime where the background noise is small compared to the received signals. The noisy wireless network is approximated by a natural deterministic one for which the capacity

can be determined exactly with a max-flow min-cut interpretation. Moreover, the capacity-achieving scheme on this deterministic network translates naturally to a scheme which is near-optimal for the original noisy network. The second approach focuses on the large-network regime and develops scaling laws on how the information theory capacity scales with the number of nodes. We will show how such scaling laws can be used to categorize networks into bandwidth-limited and power limited regimes, in analogy with those of point-to-point links.

David Tse received the B.A.Sc. degree in systems design engineering from University of Waterloo, Canada in 1989, and the M.S. and Ph.D. degrees in electrical engineering from Massachusetts Institute of Technology in 1991 and 1994 respectively. From 1994 to 1995, he was a postdoctoral member of technical staff at A.T. & T. Bell Laboratories. Since 1995, he has been at the Department of Electrical Engineering and Computer Sciences in the University of California at Berkeley, where he is currently a Professor. He received a 1967 NSERC 4-year graduate fellowship from the government of Canada in 1989, a NSF CAREER award in 1998, the Best Paper Awards at the Infocom 1998 and Infocom 2001 conferences, the Erlang Prize in 2000 from the INFORMS Applied Probability Society, the IEEE Communications and Information Theory Society Joint Paper Award in 2001, and the Information Theory Society Paper Award in 2003. He was the Technical Program co-chair of the International Symposium on Information Theory in 2004, and was an Associate Editor of the IEEE Transactions on Information Theory from 2001 to 2003. He is a coauthor, with Pramod Viswanath, of the text “Fundamentals of Wireless Communication”. His research interests are in information theory, wireless communications and networking.

Wednesday, March 19

7:30–8:30 a.m.

Breakfast
Convocation Room

8:30–11:45 a.m.

Sessions
WA01 – WA08

10:00–10:15 a.m.
Break

11:45–12:45 p.m.

Plenary Speaker:
Andrew Odlyzko

12:45–2:15 p.m.

Lunch

2:15–5:30 p.m.

Sessions
WP01 – WP07

3:45–4:00 p.m.
Break

6:00–8:00 p.m.

Reception
Charter Club
Ticket required for admittance

INVITED SESSION

WA-01

Sparse Representations and Frames I: Compressed Sensing Room F006

Organizers and Chairs: Gitta Kutyniok and Ali Pezeshki

Iteratively Re-weighted Least Squares Minimization: Proof of Faster than Linear Rate for Sparse Recovery (292)

Ingrid Daubechies, Princeton University
Sinan Güntürk, Johann Randon Institute for Computational and Applied Mathematics
Ronald DeVore, University of South Carolina
Massimo Fornasier, Courant Institute

Single-Bit Compressive Sensing

Petros T. Boufounos, Rice University
Richard G. Baraniuk, Rice University

The Dantzig Selector and Generalized Thresholding

Justin Romberg, Georgia Institute of Technology

Compressed Channel Sensing

Waheed Bajwa, University Wisconsin-Madison
Jarvis Haupt, University Wisconsin-Madison
Robert Nowak, University Wisconsin-Madison
Gil M. Raz, GMR Research and Technology

Noisy Compressive Sampling in Linear and Sublinear Regimes

Mehmet Akcakaya, Harvard University
Vahid Tarokh, Harvard University

A Fast Reconstruction Algorithm for Deterministic Compressive Sensing using Second Order Reed-Muller Codes

Stephen Howard, Defense Science and Technology Organisation, Australia
Robert Calderbank, Princeton University
Stephen Searle, University of Melbourne

INVITED SESSION

WA-02

Optimization of Networks I: Congestion Control and Routing Room F101

Organizer and Chair: Mung Chiang

Bandwidth Sharing in Overloaded Networks

Regina Egorova, CWI, Eindhoven University of Technology
Bert Zwart, Georgia Institute of Technology
Sem Borst, CWI, Alcatel-Lucent

Modelling Multi-Path Problems

Richard Gibbens, University of Cambridge

On Wireless Network Scheduling with Intersession Network Coding

Chih-Chun Wang, Purdue University
Ness Shroff, Ohio State University

Game Theory for Heterogeneous Flow Control

Ao Tang, Cornell University
Lachlan Andrew, California Institute of Technology

Optimal Traffic Engineering via Newton's Method

Dahai Xu, AT&T Labs

■ WA-03

Multiple Antenna Systems Room F004

Chair: Anelia Somekh-Baruch

A Simulation Study of Antenna Selection for Compact MIMO Arrays

Yang Yang, Lehigh University
Sana Sfar, Lehigh University
Rick S. Blum, Lehigh University

On the Degrees-of-Freedom of the MIMO Interference Channel

Peter A. Parker, MIT Lincoln Laboratory
Daniel W. Bliss, MIT Lincoln Laboratory
Vahid Tarokh, Harvard University

Energy-Efficient Adaptive MIMO Systems Leveraging Dynamic Spare Capacity

Hongseok Kim, University of Texas-Austin
Chan-Byoung Chae, University of Texas-Austin
Gustavo de Veciana, University of Texas-Austin
Robert W. Heath, Jr., University of Texas-Austin

Optimizing the Rate of a Correlated MIMO Link Jointly Over Channel Estimation and Data Transmission Parameters

Alkan Soysal, University of Maryland
Sennur Ulukus, University of Maryland

Low Complexity Multiuser MIMO Scheduling with Chordal Distance

Kyeongjun Ko, Seoul National University
Jungwoo Lee, Seoul National University

Distributed Antenna System: Performance Analysis in Multi-User Scenario

Lin Dai, City University of Hong Kong

■ **WA-04** **Orthogonal Frequency Division Multiplexing** **Room F112**

Chair: Ozgur Oyman

Optimum Channel Estimation Pilot Design for CDD-OFDM with Application to DVB

Sili Lu, University of Texas-Dallas
Naofal Al-Dhahir, University of Texas-Dallas

Client-Centric Fractional Frequency Reuse Based on User Cooperation in OFDMA Networks

Stefan Geirhofer, Cornell University
Ozgur Oyman, Intel Corporation

EVM Optimization for OFDM Systems with Deterministic Constraint on the Peak-to-Average Power Ratio

Qijia Liu, Georgia Institute of Technology
Robert J. Baxley, Georgia Institute of Technology
Xiaoli Ma, Georgia Institute of Technology
G. Tong Zhou, Georgia Institute of Technology

On Jitter Effects in OFDM Systems

Francesco Palmieri, Seconda Universit`a di Napoli
Gianmarco Romano, Seconda Universit`a di Napoli
Elettra Venosa, Seconda Universit`a di Napoli

CFO Estimation in OFDM Systems and Effects of Nonlinear Power Amplifiers

Amaresh V. Malipatil, University of Notre Dame
Hao Zhou, University of Notre Dame
Yih-Fang Huang, University of Notre Dame

A Precoded OFDMA System with User Cooperation

Yao Yu, Drexel University
Sarod Yatawatta Kapteyn, Astronomical Institute (RUG)
Athina P. Petropulu, Drexel University

■ **WA-05** **Distributed Detection and Estimation I** **Room F008**

Chair: Predrag Spasojevic

Radio Scene Analysis Using Trilinear Decomposition

Goran Ivkovic, Rutgers University
Predrag Spasojevic, Rutgers University
Ivan Seskar, Rutgers University

Cramer-Rao Bound for Target Velocity Estimation in MIMO Radar with Widely Separated Antennas

Qian He, University of Electronic Science and Technology of China
Rick S. Blum, Lehigh University
Hana Godrich, New Jersey Institute of Technology
Alexander M. Haimovich, New Jersey Institute of Technology

Cramer-Rao Bound on Target Localization Estimation in MIMO Radar Systems

Hana Godrich, New Jersey Institute of Technology
Alexander M. Haimovich, New Jersey Institute of Technology
Rick S. Blum, Lehigh University

Optimal Camera Selection for Target Localization in Camera Sensor Networks

Liang Liu, Beijing University of Posts and Telecommunications
Huadong Ma, Beijing University of Posts and Telecommunications
Xi Zhang, Texas A&M University

Source Localization Performance of a Multi-Array Network under Sensor Orientation and Position Uncertainty

Brent Gold, Virginia Tech
Michael J. Roan, Virginia Tech
Martin Johnson, Virginia Tech
Elizabeth Hoppe, Virginia Tech

Distributed Estimation Using Reduced Dimensionality Sensor Observations: A Separation Perspective

Chao Yu, University of Rochester
Gaurav Sharma, University of Rochester

■ **WA-06** **Cooperative Communications I** **Room F108**

Chair: Deniz Gunduz

Optimal Memoryless Relays with Non-coherent Modulation

David Crouse, University of Connecticut
Christian R. Berger, University of Connecticut
Shengli Zhou, University of Connecticut
Peter Willett, University of Connecticut

Grassmannian Beamforming for MIMO Amplify-and-Forward Relaying

Behrouz Khoshnevis, University of Toronto
Wei Yu, University of Toronto
Raviraj Adve, University of Toronto

An Efficient Adaptive Distributed Space Time Coding Scheme for Cooperative Relaying

Jamshid Abouei, University of Waterloo
Hossein Bagheri, University of Waterloo
Amir K. Khandani, University of Waterloo

On Achievable Rates for the Relay Channels with Generalized Feedbacks

Jinhua Jiang, National University of Singapore
Yan Xin, National University of Singapore

Protocols and System Capacity of Relay-Enhanced HSDPA Systems

Ruiyuan Hu, Lehigh University
Sana Sfar, Interdigital
Gregg Charlton, Interdigital
Alex Reznik, Interdigital

Achievable Rates and Training Optimization for Fading Relay Channels with Memory

Sami Akin, University of Nebraska-Lincoln
Mustafa Cenk Gursoy, University of Nebraska-Lincoln

■ **WA-07** **Cognitive Radio** **Room F109**

Chair: Lifeng Lai

Collaborative Autocorrelation-Based Spectrum Sensing of OFDM Signals in Cognitive Radios

Sachin S. Chaudhari, Helsinki University of Technology
Jarmo Lunden, Helsinki University of Technology
Visa Koivunen, Helsinki University of Technology

Channel-Hopping Based Single Transceiver MAC for Cognitive Radio Networks

Hang Su, Texas A&M University
Xi Zhang, Texas A&M University

Quickest Spectrum Sensing in Cognitive Radio

Husheng Li, University of Tennessee
Chengzhi Li, North Carolina State University
Huaiyu Dai, North Carolina State University

Sum Transmission Power of Multiple Cooperative Secondary Transmitters in Dynamic Spectrum Access Networks

Juite Hwu, State University of New York-Binghamton
Jinying Chen, State University of New York-Binghamton
Xiaohua Li, State University of New York-Binghamton

Secure Transmission Power of Cognitive Radios for Dynamic Spectrum Access Applications

Xiaohua Li, State University of New York-Binghamton
Jinying Chen, State University of New York-Binghamton
Fan Ng, State University of New York-Binghamton

Cognitive Radio in Slow Fading Channels with Partial Channel State Information at the Transmitter

Pin-Hsun Lin, National Taiwan University
Chung-Pi Lee, National Taiwan University
Shih-Chun Lin, National Taiwan University
Hsuan-Jung Su, National Taiwan University

WA-08 Receiver Design Room F112

Chair: Aylin Yener

Ground-to-Air Interference Analysis in Cellular ATG Systems

Besma Smida, Harvard University
Vahid Tarokh, Harvard University

Fast and Efficient Proportionate Adaptive Algorithms for Pure Delay

Hongyang Deng, Freescale Semiconductor, Inc.
Roman Dyba, Freescale Semiconductor, Inc.

An Efficient Partial Update Algorithm Based on Coefficient Block for Sparse Impulse Response Identification

Hongyang Deng, Freescale Semiconductor, Inc.
Roman Dyba, Freescale Semiconductor, Inc.

Partial Update NLMS Algorithm for Sparse System Identification with Switching Between Coefficient-based and Input-based Selection

Jinhong Wu, George Washington University
Milos Doroslovacki, George Washington University

Parallel Structures for Fast Estimation of Echo Path Pure Delay and their Applications to Sparse Echo Cancellers

Roman Dyba, Freescale Semiconductor, Inc.

Interference Management for Multiuser Two-Way Relaying

Min Chen, Pennsylvania State University
Aylin Yener, Pennsylvania State University

INVITED SESSION

WP-01

Sparse Representations and Frames II: Sparsity and Dimension Reduction Room F006

Organizers and Chairs: Gitta Kutyniok and Ali Pezeshki

Sparsity in MRI RF Excitation Pulse Design

Adam C. Zelinski, MIT
Vivek K. Goyal, MIT
Elfar Adalsteinsson, MIT
Lawrence L. Wald, Harvard Medical School

Analysis of l_1 Minimization in the Geometric Separation Problem

Gitta Kutyniok, Stanford University
David Donoho, Stanford University

On Sparse Representations of Linear Operators and the Approximation of Matrix Products

Mohamed-Ali Belabbas, Harvard University
Patrick J. Wolfe, Harvard University

Information Theory Based Estimator of the Number of Sources in a Sparse Linear Mixing Model

Radu Balan, University of Maryland

Distributed Processing in Frames for Sparse Approximation

Christopher Rozell, University of California-Berkeley

Fusion Frames and Robust Dimension Reduction

Ali Pezeshki, Princeton University
Gitta Kutyniok, Stanford University
Robert Calderbank, Princeton University

INVITED SESSION

WP-02

Optimization of Networks II: Content Distribution and Peering Room F101

Organizer and Chair: Mung Chiang

Network Distribution Capacity and Content-Pipe Gap

Mung Chiang, Princeton University

Peer-to-Peer Utility Maximization

Minghua Chen, Chinese University of Hong Kong
Sudipta Sengupta, Microsoft Research-Redmond
Miroslav Ponec, Polytech University
Phillip Chou, Microsoft Research-Redmond
Jin Li, Microsoft Research-Redmond

On Flat-Rate and Usage-Based Pricing for Tiered Commodity Internet Services

George Kesidis, Pennsylvania State University
Gustavo de Veciana, University of Texas-Austin
A. Das, Pennsylvania State University

Process on Pricing with Peering

Eui-Woong Lee, California Institute of Technology
 David Buchfuhrer, California Institute of Technology
 Lachlan Andrew, California Institute of Technology
 Ao Tang, Cornell University
 Steven Low, California Institute of Technology

A Lower-Bound on the Number of Rankings Required in Recommender System Using Collaborative Filtering

Peter Marbach, University of Toronto

Peer-to-Peer Live Streaming: Optimality Results and Open Problems

Laurent Massoulié, Thompson-Paris Research Lab

■ **WP-03**
Code Division Multiple Access and Spread Spectrum
Room F112

Chair: Luca Sanguinetti

Blind Source Separation and Equalization in Asynchronous MIMO DS-CDMA

Yang Zhang, University of Pennsylvania
 Saleem A. Kassam, University of Pennsylvania
 Vijitha Weerackody, University of Pennsylvania

Quasi-Large Sparsely Spread CDMA: Approach to Single-User Bound by Linearly-Complex

Yi Sun, City College of New York

Self-Encoded Spread Spectrum Synchronization with Genetic Algorithm and Markov Chain Analysis

Kun Hua, University of Nebraska-Lincoln
 Lim Nguyen, University of Nebraska-Lincoln
 Won Mee Jang, University of Nebraska-Lincoln

BER Performance of DS-CDMA Communications for Continuous Phase Modulation and Various Binary Code Families

Handan Agirman-Tosun, New Jersey Institute of Technology
 Ali N. Akansu, New Jersey Institute of Technology

A New Finger Placement Algorithm for the Generalized RAKE Receiver

Jin He, Northeastern University
 Masoud Salehi, Northeastern University

Demonstration of 2-D Wavelength-Hopping Time-Spreading Incoherent Optical CDMA Network by Pulse Carving of CW Laser Source

Yanhua Deng, Princeton University
 Mable P. Fok, Princeton University
 Paul R. Prucnal, Princeton University

■ **WP-04**
Multimedia Signal Processing
Room F109

Chair: Bede Liu

A Novel Approach for Image Fusion Based on Markov Random Fields

Min Xu, Syracuse University
 Hao Chen, Syracuse University
 Pramod K. Varshney, Syracuse University

The Empirical Model of Video Quality Distortion for Rate Adaptive Scalable Wireless Video

Yongju Cho, Michigan State University
 Hayder Radha, Michigan State University
 Jeongju Yoo, European Training and Research Institute
 Jinwoo Hong, European Training and Research Institute

A Mutual Information Based Double Talk Detector for Nonlinear Systems

Kun Shi, Georgia Institute of Technology
 Xiaoli Ma, Georgia Institute of Technology
 G. Tong Zhou, Georgia Institute of Technology

Steganalysis for ± 1 Embedding by Fusing Rate-Specific SVM Classifiers

Lisa Marvel, US Army Research Laboratory
 Brian Henz, US Army Research Laboratory
 Charles Bonchelet, University of Delaware

Randomized Frameproof Codes: Fingerprinting Plus Validation Minus Tracing

N. Prasanth Anthapadmanabhan, University of Maryland
 Alexander Barg, University of Maryland

A Novel Bias and Low Variance Curve Estimation Algorithm

Dian Gong, University of California-Riverside
 Yunfan Li, University of California-Riverside
 Xuemei Zhao, Tsinghua University

■ **WP-05**
Information Theory I
Room F108

Chair: Lalitha Sankar

Capacity Optimization for Ricean Correlated MIMO Channels with Decorrelator Receiver

Shyam Pandula, George Mason University
 Bernd-Peter Paris, George Mason University

A Successive Convex Approximation Algorithm for Weighted Sum-Rate Maximization in Downlink OFDMA Networks

Luca Venturino, Università degli Studi di Cassino
 Narayan Prasad, NEC Laboratories America
 Xiaodong Wang, Columbia University

Outer Bound and Noisy-Interference Sum-Rate Capacity for Symmetric Gaussian Interference Channel

Xiaohu Shang, Syracuse University
 Gerhard Kramer, Bell Labs, Alcatel-Lucent
 Biao Chen, Syracuse University

The Information-Outage Probability of Finite-Length Codes over AWGN Channels

David S. Buckingham, West Virginia University
 Matthew C. Valenti, West Virginia University

Some Bounds on the Network Outage Probability in Wireless Networks

Slawomir Stanczak, Fraunhofer German-Sino Lab for Mobile Co
 Michal Kaliszan, Fraunhofer German-Sino Lab for Mobile Co

Volume of Small Balls in the Real Stiefel Manifold

Rajesh T. Krishnamachari, University of Colorado-Boulder
 Mahesh K. Varanasi, University of Colorado-Boulder

■ **WP-06**
Wireless Transceiver Design I
Room F110

Chair: Hisashi Kobayashi

Optimal Control of Transmission Errors with Power Allocation and Stability in ARQ Downlink

Anastasios Giovanidis, Heinrich Hertz Institute - MCI
Gerhard Wunder, Heinrich Hertz Institute - MCI
Holger Boche, Technical University of Berlin and Heinrich Hertz Institute
Stoycho Stefanov, Heinrich Hertz Institute-MCI

Counting Wireless Broadcast Trees Based on the Number of Internal Nodes in the Tree

Fulu Li, MIT

A Low Complexity Linear Multiuser Beamforming Algorithm with Limited Feedback

Chan-Byoung Chae, University of Texas-Austin
David Mazzaresse, Samsung Electronics
Nihar Jindal, University of Minnesota
Robert W. Heath, Jr., University of Texas-Austin

A Comparison of Cooperative Beamforming to Direct Transmission Based on Spectral Efficiency

Lun Dong, Drexel University
Athina P. Petropulu, Drexel University

Coordinated Beamforming for the Multi-Cell Multi-Antenna Wireless System

Hayssam Dahrouj, University of Toronto
Wei Yu, University of Toronto

INVITED SESSION

WP-07
Communication, Sensing and Compression
Room F008

Organizers and Chairs: Robert Bonneau and Mike Wicks

Distributed, Coordinate-Free Coverage Verification in Mobile Sensor Networks

Alireza Tahbaz-Salehi, University of Pennsylvania
Ali Jadbabaie, University of Pennsylvania

Sparse Graph Codes and Practical Decoding Algorithms for Communicating over Packet Timings in Networks

Todd P. Coleman, University of Illinois at Urbana-Champaign
Negar Kiyavash, University of Illinois at Urbana-Champaign

Distributed Bayesian Compressive Sensing with Dirichlet Processes

Larry Carin, Duke University

An Outer Bound for Distributed Compression of Linear Functions

Aaron B. Wagner, Cornell University

Near Optimal Lossy Source Coding and Compression-Based Denoising via Markov Chain Monte Carlo

Shirin Jalali, Stanford University
Tschahy Weissman, Stanford University

Thursday, March 20

7:30–8:30 a.m.	8:30–11:45 a.m.	11:45–12:45 p.m.	12:45–2:15 p.m.	2:15–5:30 p.m.	6:00– 8:00 p.m.
Breakfast Convocation Room	Sessions TA01–TA08 10:00–10:15 a.m. Break	Plenary Speaker: Richard Baraniuk	Lunch	Sessions TP01 – TP06 3:45–4:00 p.m. Break	Reception Charter Club Ticket required for admittance

TA-01 Compressed Sensing I Room F006

Chair: Christopher Rozell

On the Frequency Resolution of Empirical Mode Decomposition

Arnab Roy, Pennsylvania State University
John F. Doherty, Pennsylvania State University

Improved Bounds for a Deterministic Sublinear-Time Sparse Fourier Algorithm

Mark A. Iwen, University of Michigan-Ann Arbor
Craig V. Spencer, University of Michigan-Ann Arbor

An Adaptive Implementation of Reference Levels in Level-Crossing Analog-to-Digital Converters

Karen M. Guan, University of Illinois at Urbana-Champaign
Andrew C. Singer, University of Illinois at Urbana-Champaign

Sparse Weighted Euclidean Superimposed Coding for Integer Compressed Sensing

Wei Dai, University of Illinois at Urbana-Champaign
Olga Milenkovic, University of Illinois at Urbana-Champaign

Reconstruction of Compressively Sensed Images via Neurally Plausible Local Competitive Algorithms

Robert L. Ortman, Rice University
Christopher J. Rozell, University of California-Berkeley
Don H. Johnson, Rice University

INVITED SESSION

TA-02 Optimization of Networks III: Scheduling and Random Access Room F101

Organizer and Chair: Mung Chiang

Revisiting the Optimal Scheduling Problem

Sastry Kompella, Naval Research Laboratory
Jeff Wieselthier, Wieselthier Research
Antony Ephremides, University of Maryland

Throughput of Random Access without Message Passing

Alexandre Proutiere, Microsoft Research
Yung Yi, Princeton University
Mung Chiang, Princeton University

Fair Scheduling Policy for Wireless Channels with Intermittent Connectivity

A. Aaram, University of Pennsylvania

M. H. R. Khouzani, University of Pennsylvania
S. Sarkar, University of Pennsylvania
Leandros Tassioulas, University of Thessaly

Reversible Networks, Distributed Optimization, and Network Scheduling: What Do They Have in Common?

Devavrat Shah, MIT
R. Sreevasta, MIT

Threshold Structure of Channel Aware Distributed Scheduling: An Optimal Stopping View

Junshan Zhang, Arizona State University

TA-03 Network Coding Room F112

Chair: Aditya Ramamoorthy

Network Coding with Multi-Generation Mixing

Mohammed D. Halloush, Michigan State University
Hayder Radha, Michigan State University

Efficient Cooperative Network Coding in Selective Decode-and-Forward Networks with Multiple Source-Destination Pairs

Lu Zhang, University of Delaware
Leonard Cimini, University of Delaware

Overlay Protection Against Link Failures Using Network Coding

Ahmed E. Kamal, Iowa State University
Aditya Ramamoorthy, Iowa State University

On the Delay and Throughput of Digital and Analog Network Coding for Wireless Broadcast

Yalin E. Sagduyu, Northwestern University
Dongning Guo, Northwestern University
Randall Berry, Northwestern University

Natural Growth Codes: Partial Recovery under Random Network Coding

Shirish S. Karande, Michigan State University
Kiran Misra, Michigan State University
Hayder Radha, Michigan State University

Decentralized Fountain Codes for Minimum-Delay Data Collection

Silvija Kokalj-Filipović, Rutgers University
Predrag Spasojević, Rutgers University
Roy Yates, Rutgers University
Emina Soljanin, Lucent-Alcatel

TA-04 Error Correction Codes Room F110

Chair: Amir Bennatan

Prioritized LT codes

Simon S. Woo, Jet Propulsion Lab
Mike Cheng, Jet Propulsion Lab

LDPC Codes Design for AWGN Channels with Causal Interference

Jianwen Zhang, National University of Singapore
Marc A. Armand, National University of Singapore
Yan Xin, National University of Singapore

Erasure Codes for Broadcasting Small Files over Erasure Channels with Low Bandwidth

Xuebin Wu, Lehigh University
Haidong Wang, Thales Communications, Inc.
Zhiyuan Yan, Lehigh University

Design of Near-Optimum Quantum Error-Correcting Codes Based on Generator and Parity-Check Matrices of LDGM Codes

Javier Garcia-Frias, University of Delaware
Kejing Liu, University of Delaware

A New BC-BICM Scheme for Block-Fading Channels

Yueqian Li, Northeastern University
Masoud Salehi, Northeastern University

On the Frame Error Rate of Transmission Schemes on Quasi-Static Fading Channels

Ioannis Chatzigeorgiou, University of Cambridge
Ian J. Wassell, University of Cambridge
Rolando Carrasco, Newcastle University

TA-05 Distributed Detection and Estimation II Room F008

Chair: Raviraj Adve

Distributed Detection in the Presence of Frequency Offset and Phase Shift

Tao Wu, Oklahoma State University
Qi Cheng, Oklahoma State University

Distributed Incumbent Estimation for Cognitive Wireless Networks

Vibhav A. Kapnadak, Purdue University
Murat Senel, Purdue University
Edward J. Coyle, Purdue University

Collaborative Quickest Detection in Ad Hoc Networks with Delay Constraint - Part I: Two-node Network

Husheng Li, University of Tennessee
Chengzhi Li, North Carolina State University
Huaiyu Dai, North Carolina State University

Collaborative Quickest Detection in Ad Hoc Networks with Delay Constraint - Part II: Multi-node Network

Husheng Li, University of Tennessee
Chengzhi Li, North Carolina State University
Huaiyu Dai, North Carolina State University

Distributed Estimation in Wireless Sensor Networks via Variational Message Passing

Yanbing Zhang, North Carolina State University
Huaiyu Dai, North Carolina State University

TA-06 Wireless Security Room F004

Chairs: Ruoheng Liu and Lifeng Lai

A Distributed Scheme for Detection of Information Flows in Chaff

Ameya Agaskar, Cornell University
Lang Tong, Cornell University
Ting He, IBM T.J. Watson Research Center

Diversity-Multiplexing Tradeoff for the Multiple-Antenna Wire-Tap Channel

Melda Yuksel, TOBB University of Economics and Technology
Elza Erkip, Polytechnic University

Strictly Positive Secrecy Rates of Binary Wiretapper Channels Using Feedback Schemes

George T. Amariuca, Louisiana State University
Shuangqing Wei, Louisiana State University

Broadcast Confidential and Public Messages

Jin Xu, Syracuse University
Biao Chen, Syracuse University

Detection of Anomalous Meetings in a Social Network

Jorge Silva, Duke University
Rebecca Willett, Duke University

MIMO-Assisted Channel-Based Authentication in Wireless Networks

Liang Xiao, Rutgers University
Larry Greenstein, Rutgers University
Narayan Mandayam, Rutgers University
Wade Trappe, Rutgers University

TA-07 Wireless Ad Hoc Networks Room F109

Chair: Shao Liu

Cross-layer Multicommodity Capacity Expansion on Ad Hoc Wireless Networks of Cognitive Radios

Alex Fridman, Drexel University
Steven Weber, Drexel University
Kapil Dandekar, Drexel University
Moshe Kam, Drexel University

End-to-End Bandwidth and Available Bandwidth Estimation in Multi-Hop IEEE 802.11b Ad Hoc Networks

Marco A. Alzate, Universidad Distrital FJC
Jose-Carlos Pagan, Universidad de Puerto Rico
Néstor M. Peña, Universidad de los Andes
Miguel A. Labrador, University of South Florida

Low Complexity Distributed Reliability for Wireless Sensor Networks

Saad B. Qaisar, Michigan State University
Hayder Radha, Michigan State University

On Error Control Schemes for Ad Hoc Networks with Multiuser Detection and Rate Control

Marco Levorato, University of Padova
Michele Zorzi, University of Padova

Cross Layer Interference Mitigation Using a Convergent Two Stage Game for Ad Hoc Networks

Engin Zeydan, Stevens Institute of Technology
Didem Kivanc, Stevens Institute of Technology
Uf Tureli, WVU Institute of Technology

Optimal Rate Control Policies for Proportional Fairness in Wireless Networks

Anna Pantelidou, University of Maryland-College Park
Anthony Ephremides, University of Maryland-College Park

TA-08 Resource Allocation in Wireless Networks Room F108

Chair: Narayan Mandayam

Incorporating Retransmission Diversity in Quality-of-Service Guaranteed Multi-User Scheduling

Xin Wang, Florida Atlantic University
Di Wang, Florida Atlantic University
Irena Li, Florida Atlantic University
Hanqi Zhuang, Florida Atlantic University
Salvatore D. Morgera, Florida Atlantic University

Optimizing Wireless Networks for Heterogeneous Spatial Loads

Balaji Rengarajan, University of Texas-Austin
Gustavo de Veciana, University of Texas- Austin

Transmission Policies for Body Area Networks with Energy Scavenging

Biplab Sikdar, Rensselaer Polytechnic Institute
Alireza Seyed, University of Rochester

Resource Allocation Algorithms for Multiuser Cooperative OFDMA Systems with Subchannel Permutation

Bo Gui, University of Delaware
Leonard Cimini, University of Delaware

Rate Adaptation via ARQ Feedback for Goodput Maximization over Time-Varying Channels

Rohit Aggarwal, Ohio State University
Phil Schniter, Ohio State University
Cam Emre Koksal, Ohio State University

Extension of Axiomatic Framework for Resource Allocation Strategies for Varying Number of Users in a Wireless System

Siddharth Naik, German Sino Lab for Mobile Communication
Holger Boche, Technical University of Berlin

INVITED SESSION

TP-01 Sparse Representations and Frames III: Quantization and Frames Room F006

Organizers and Chairs: Gitta Kutyniok and Ali Pezeshki

PCM - SigmaDelta Comparison and Sparse Representation Quantization

John J. Benedetto, University of Maryland
Onur Oktay, University of Maryland

Simultaneous and Hybrid Beta Encodings

Sinan Güntürk, Courant Institute

Asymptotic White Noise Hypothesis for PCM Quantization

Sergio V. Borodachov, Georgia Institute of Technology
Yang Wang, Michigan State University

Real Equiangular Frames

Peter Casazza, University of Missouri
Janet C. Tremain, University of Missouri
Dan Redmond, University of Missouri

Frames in Bioimaging

Jelena Kovacevic, Carnegie Mellon University

Frames for Linear Reconstruction without Phase

Bernhard Bodmann, University of Houston
Radu Balan, University of Maryland
Peter Casazza, University of Missouri
Dan Edidin, University of Missouri

INVITED SESSION

TP-02 Optimization of Networks IV: Power Control and Spectrum Management Room F101

Organizer and Chair: Mung Chiang

Distributed Interference Pricing for OFDM Wireless Networks with Non-Separable Utilities

Changxin Shi, Northwestern University
Randall A. Berry, Northwestern University
Michael L. Honig, Northwestern University

Bandwidth Allocation Games under Budget and Access Constraints

Amol Sahasrabudhe, Rensselaer Polytechnic Institute
Koushik Kar, Rensselaer Polytechnic Institute

Bandwidth Exchange as an Incentive for Relaying

Dan Zhang, Rutgers University
Omer Ileri, KTH-Royal Institute of Technology
Narayan Mandayam, Rutgers University

Distributed Power Control in Wireless Ad Hoc Networks using Message Passing: Throughput Optimality and Network Utility Maximization

Aneesh Reddy, University of Texas-Austin
Sanjay Shakkottai, University of Texas-Austin
Lei Ying, Iowa State University

INVITED SESSION

TP-03 Cooperative Communications II Room F108

Organizers and Chairs: Elza Erkip and Amir Bennatan

Random Access over Multiple Access Channels: A Queuing Perspective

Shreesankar Bodas, University of Texas-Austin
Vijay Subramanian, Rensselaer Polytechnic Institute
Sriram Vishwanath, University of Texas-Austin

Adversarial Interference Models for Multi Antenna Cooperative Systems

Anand Sarwate, University of California-Berkeley
Michael Gastpar, University of California-Berkeley

Effects of Cooperation on the Secrecy of Multiple Access Channels with Generalized Feedback

Ersen Ekrem, University of Maryland-College Park
Sennur Ulukus, University of Maryland-College Park

Network Coding on Lines with Broadcast

Gerhard Kramer, Bell Labs, Alcatel-Lucent
Sadegh Tabatabaei, Texas A&M University
Serap Savari, Texas A&M University

A New Achievable Region for Interference Channel with Generalized Feedback

Shuang Yang, (Echo) University of Illinois-Chicago
Daniela Tuninetti, University of Illinois-Chicago

On the Impact of Limited-Capacity Backhaul and Inter-Users Links in Cooperative Multicell Networks

Oswaldo Simeone, New Jersey Institute of Technology
Oren Somekh, Princeton University
Amichai Sanderovich, Technion-Israel
Benjamin M. Zaidel, Technion-Israel
Shlomo Shamai (Shitz), Technion-Israel

TP-04 Wireless Networks: Modeling and Performance Room F008

Chair: Rui Zheng-Shen

An Analytical Model for Evaluating Usable Throughput Capacity in Ad-Hoc Wireless Networks

Albert Futernik, ITT Communications Systems
Alexander M. Haimovich, New Jersey Institute of Technology

Throughput and Delay Analysis of Wireless Random Access Networks

Lin Dai, City University of Hong Kong
Tony Lee, Chinese University of Hong Kong

Separation Theorems of Wireless Networking

Alejandro R. Ribeiro, University of Minnesota
Georgios B. Giannakis, University of Minnesota

A Distributed Asynchronous Algorithm For Spectrum Sharing In Wireless Ad Hoc Networks

Behdash Babadi, Harvard University
Vahid Tarokh, Harvard University

VANET Capacity Scaling under the Physical Model

Mohammad Nekoui, University of Massachusetts-Amherst
Hossein Pishro-Nik, University of Massachusetts-Amherst

Percolation-Theory Based Density Derivations of Wireless Sensor Network Nodes for Preventing Exposure Paths

Liang Liu, Beijing University of Posts and Telecommunications
Xi Zhang, Texas A&M University
Huangong Ma, Beijing University of Posts and Telecommunications

TP-05 Relay Networks Room F004

Chair: Richard Fan

Resource Allocation for Cooperative Relaying

Jie Yang, Princeton University
Deniz Gunduz, Princeton University
D. Richard Brown, Worcester Polytechnic
Elza Erkip, Polytechnic University

Relay Selection Methods for Wireless Cooperative Communications

Seunghoon Nam, Harvard University
Mai Vu, Harvard University
Vahid Tarokh, Harvard University

Energy Efficiency of a Two-Stage Relaying Scheme in Wireless Sensor Networks

Ruben Heras Evangelio, Fraunhofer German-Sino Lab for Mobile Comm
Slawomir Stanczak, Fraunhofer German-Sino Lab for Mobile Comm
Clemens Schnurr, Fraunhofer German-Sino Lab for Mobile Comm

Dominant Set Based ALLIANCES: A New Approach to Handle Bursty Traffic and Collisions in Sensor Networks

Joydeep Tripathi, Drexel University
Lun Dong, Drexel University
Jaudelice C. de Oliveira, Drexel University
Athina P. Petropulu, Drexel University

On the Energy Delay Trade-off of a Two-Way Relay Network

Xiang He, Pennsylvania State University
Aylin Yener, Pennsylvania State University

Practical Issues in Optimum Resource Allocation for Relay Networks

Rui Cao, University of Florida
Liuqing Yang, University of Florida

TP-06 Wireless Transceiver Design II Room F109

Chair: Hazer Inaltekin

Quantized Multi-rank Beamforming for MIMO Systems

Mohammad Khojastepour, NEC Laboratories America
Narayan Prasad, NEC Laboratories America
Shuangquan Wang, NEC Laboratories America
Xiaodong Wang, NEC Laboratories America
Mohammad Madhian, NEC Laboratories America

Physical Layer Multicasting with Linear MIMO Transceivers

Shuying Shi, Technical University of Berlin
Martin Schubert, Fraunhofer German-Sino Lab for Mobile Comm
Holger Boche, Fraunhofer Heinrich-Hertz-Institute HHI

Diversity-Multiplexing Gain Tradeoff with Peak to Average Power Ratio Constraints

Chung-Pi Lee, National Taiwan University
Hsuan-Jung Su, National Taiwan University

On Optimal Training and Beamforming in Uncorrelated MIMO Systems with Feedback

Francisco Rubio, Ctr Tecnologic de Telecommunications de Catalunya
Michael Honig, Northwestern University
Dongning Guo, Northwestern University
Xavier Mestre, Ctr Tecnologic de Telecommunications de Catalunya

Enhanced IEEE 802.11n Quantized Feedback Beamforming with Power Allocation

Xiantao Sun, University of Delaware
Leonard J. Cimini, University of Delaware
Douglas S. Chan, Cisco Systems
Larry J. Greenstein, University of Delaware

Robust Design for Cognitive Beamforming with Partial Channel State Information

Lan Zhang, National University of Singapore
Ying-Chang Liang, Institute of Infocomm Research
Yan Xin, National University of Singapore

Friday, March 21

7:30–8:00 a.m.

Breakfast
Convocation Room

8:00–11:15 a.m.

Sessions
FA01 – FA08

10:00–10:15 a.m.
Break

11:15–12:15 p.m.

Plenary Speaker:
David Tse

12:15–2:15 p.m.

Lunch

2:15–5:30 p.m.

Sessions
FP01 – FP04

3:45–4:00 p.m.
Break

INVITED SESSION

FA-01 Optimization of Networks V: Control of Wireless Networks Room F101

Organizer and Chair: Mung Chiang

Imperfect Randomised Algorithms for the Optimal Control of Wireless Networks

Atilla Eryilmaz, Ohio State University
Devavrat Shah, MIT
Asuman Ozdaglar, MIT
Eytan Mordiano, MIT

Optimal Resource Allocation for OFDM Uplink Communication: A Primal-Dual Approach

Minghua Chen, Chinese University of Hong Kong
Jianwei Huang, Chinese University of Hong Kong

Approximate Control of Wireless Networks with Flow Level Dynamics

Long Le, University of Waterloo
Ravi Mazumdar, University of Waterloo

Optimal Path Planning for Mobile Backbone Networks

Anand Srinivas, Airvana, Inc.
Eytan Modiano, MIT

Resource and Power Costs in Dynamics Spectrum Allocation

Joydeep Acharya, Rutgers University
Roy Yates, Rutgers University

Equilibria and Price of Anarchy in Parallel Relay Networks with Node Pricing

Yufang Xi, Yale University
Edmund Yeh, Yale University

FA-02 Compressed Sensing II Room F004

Chair: Sanjeev Kulkarni

Unsupervised Distributional Anomaly Detection for a Self-Diagnostic Speech Activity Detector

Nash M. Borges, Johns Hopkins University
Gerard G. Meyer, Johns Hopkins University

Compressive Sensing Detection of Stochastic Signals

Jose-Emilio Vila-Forcen, Universidad Carlos III de Madrid
Antonio Artes-Rodriguez, Universidad Carlos III de Madrid
Javier Garcia-Frias, University of Delaware

A Measure of Interference in Sparse Atomic Estimations

Bob L. Sturm, University of California-Santa Barbara
John J. Shynk, University of California-Santa Barbara
Laurent Daudet, University Pierre and Marie Curie

On Empirical Capacity, Random Coding Bound, and Probability of Outage of an Object Recognition System Under Constraint of PCA-Encoding

Xiaohan Chen, West Virginia University
Natalia A. Schmid, West Virginia University

FA-03 Wireless Transceiver Design III Room F006

Chair: Maria Fresia

Quantized Linear MIMO Precoding for Multiuser Downlink Systems

Mohammad Khojastepour, NEC Laboratories America
Xiaodong Wang, NEC Laboratories America
Mohammad Madihian, NEC Laboratories America

Enhanced Adaptive Antenna Algorithms for Asynchronous TDMA Systems

Myung-Hoon Yeon, University of California-Santa Barbara
John J. Shynk, University of California-Santa Barbara

Adaptive Codebook for Beamforming in Limited Feedback MIMO Systems

Kiarash Amiri, Rice University
Davood Shamsi, Rice University
Behnaam Aazhang, Rice University
Joseph R. Cavallaro, Rice University

Multiuser Linear Precoding for Cooperating Base Stations with Asynchronous Interference

Imad H. Azzam, University of Toronto
Raviraj S. Adve, University of Toronto

Improved Sum-Rate Optimization in the Multiuser MIMO Downlink

Adam J. Tenenbaum, University of Toronto
Raviraj S. Adve, University of Toronto

FA-04 Information Theory II Room F112

Chair: Sergio Verdu

Partial Side Information Problem: Equivalence of Two Inner Bounds

Soumya Jana, University of Illinois at Urbana-Champaign
Richard Blahut, University of Illinois at Urbana-Champaign

Tight Bounds on the AUH Codes

Soheil Mohajer, Ecole Polytechnique Federale de Lausanne
Ali Kakhbod, University of Michigan

Some Notes On Fix-Free Codes

Ali Kakhbod, Michigan University-Ann Arbor
Ali Nazari, Michigan University-Ann Arbor
Morteza Zadimoghaddam, Sharif University

Identifying Sufficient Statistics in Information Networks

Huaiyu Dai, North Carolina State University
Husheng Li, University of Tennessee

On the Entropy and Filtering of Hidden Markov Processes Observed via Arbitrary Channels

Jun Luo, Northwestern University
Dongning Guo, Northwestern University

■ **FA-05**

Distributed Detection and Estimation III Room F008

Chair: D. Richard Brown

Distributed Non-Parametric Estimation in a Bandwidth-Constrained Sensor Network

Pu Wang, Stevens Institute of Technology
Hongbin Li, Stevens Institute of Technology
Jun Fang, Stevens Institute of Technology

Memory-Constrained ML-Optimal Tree Search Detection

Yongmei Dai, Lehigh University
Zhiyuan Yan, Lehigh University

The Chinese Generals Problem

Edwin Soedarmadji, California Institute of Technology

Power Constrained Decentralized Estimation over Noisy Channels for Wireless Sensor Networks

Jun Fang, Stevens Institute of Technology
Hongbin Li, Stevens Institute of Technology

In-Network Channel Decoding Using Consensus on Log-Likelihood Ratio Averages

Hao Zhu, University of Minnesota
Alfonso Cano, University of Minnesota
Georgios B. Giannakis, University of Minnesota

■ **FA-06**

Mathematical Foundations Room F108

Chair: Fernando Perez-Cruz

On Node Selection for Classification in Correlated Data Sets

Razvan Cristescu, Technical University Eindhoven

The Expansion Rate of Margulis Expanders and LPS Expanders for Vertex Set ZxZ

Fulu Li, MIT

Genuine Portfolio Diversification Using Subspace Factorizations: A Novel Approach

Ruairi de Frein, University College Dublin (CASL)
Scott Rickard, University College Dublin (CASL)
Konstantinos Drakakis, University College Dublin (CASL)

Complexity of Decoding Gabidulin Codes

Maximilien R. Gadouleau, Lehigh University
Zhiyuan Yan, Lehigh University

Efficient Computation of the M-phase Vector that Maximizes a Rank-deficient Quadratic Form

Dimitris S. Papailiopoulos, Technical University of Crete
George N. Karystinos, Technical University of Crete

When is Non-Negative Matrix Decomposition Unique?

Scott T. Rickard, University College Dublin
Andrzej Cichocki, Brain Science Institute RIKEN

■ **FA-07**

Space-Time Codes Room F109

Chair: Robert Calderbank

Optimizing Redundancy Using MDS Codes and Dynamic Symbol Allocation in Mobile Ad Hoc Networks

Anna Kacewicz, Cornell University
Stephen B. Wicker, Cornell University

Precoder Design via Approximate Joint Diagonalization for Ricean Correlated MIMO Channels in STBC Systems

Shyam Pandula, George Mason University
Bernd-Peter Paris, George Mason University

Cross-entropy based Symbol Selection and Partial Iterative Decoding for Serial Concatenated Convolutional Codes

Jinhong Wu, George Washington University
Branimir R. Vojcic, George Washington University
Zhengdao Wang, Iowa State University

Improved Transmission Scheme for Orthogonal Space Time Codes

Amir Laufer, New Jersey Institute of Technology
Yehezkel Bar-Ness, New Jersey Institute of Technology

Limited Feedback Space-Time Coding in Correlated MIMO Channels

Che Lin, University of Illinois at Urbana-Champaign
Vasanthan Raghavan, University of Illinois at Urbana-Champaign
Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign

The Optimality of D-BLAST-ZF with Antenna Order Feedback Without or With Antenna Selection

Manav Garg, University of Colorado-Boulder
Mahesh K. Varanasi, University of Colorado-Boulder

■ **FA-08**

Networking: Performance Analysis Room F110

Chair: Athina Petropulu

A Linear Integer Programming Approach to Analyze P2P Media Streaming

Fulu Li, MIT

Performance Evaluation of Error Control Protocols over Finite-State Markovian Channels

Sohraab Soltani, Michigan State University
Hayder Radha, Michigan State University

A New Approximation for Slotted Buffered Aloha

Steven P. Weber, Drexel University
Ananth Kini, Drexel University
Athina P. Petropulu, Drexel University

Can API-RCP be TCP Friendly with RED?

Yang Hong, University of Ottawa
Oliver Yang, University of Ottawa

Network Tomography Based on Additive Metrics

Jian Ni, Yale University
Sekhar Tatikonda, Yale University

■ **FP-01**
Wireless Communication
Room F110

Chair: Simon Pun

A Genetic Algorithm for Designing Constellations with Low Error Floors

Matthew C. Valenti, West Virginia University
Raghu Doppalapudi, West Virginia University
Don Torrieri, US Army Research Lab

Improved Long-Range Prediction with Data-Aided Noise Reduction for Adaptive Modulation Systems

Tao Jia, North Carolina State University
Alexandra Duel-Hallen, North Carolina State University
Hans Hallen, North Carolina State University

Routing Strategy for Minimizing Packet Loss in Disruptive Tolerant Networks

Gabriel Lipsa, University of Maryland-College Park

Performance Analysis of CSMA and RI-BTMA in an Ad Hoc Network

Vishal Parikh, Stevens Institute of Technology
Didem Kivanc-Tureli, Stevens Institute of Technology
Uf Tureli, WVU Institute of Technology

MIMO Performance Evaluation in UTRAN Long Term Evolution Downlink

Alexandra Oborina, Helsinki University of Technology
Martti Moision, Helsinki University of Technology
Tero Henttonen, Helsinki University of Technology
Esa Pernila, Helsinki University of Technology
Visa Koivunen, Helsinki University of Technology

Cooperative Diversity with Selfish Users

Sintayehu Dehnie, Polytechnic University
Nasir Memon, Polytechnic University

INVITED SESSION

FP-02
Optimization of Networks VI: Theory and Models
Room F101

Organizer and Chair: Mung Chiang

Optimization via Communication Networks

Matthew Andrews, Bell Labs

A DTN Packet Forwarding Scheme Based on Thermodynamics

Mehdi Kalantari, University of Maryland-College Park
Richard La, University of Maryland-College Park

Dynamics Data Compression for Wireless Transmission Over a Fading Channel

Michael Neely, University of Southern California
Abhishek Sharma, University of Southern California

Subgradient Methods in Network Resource Allocation: Rate analysis

Angelia Nedic, University of Illinois at Urbana-Champaign
Asuman Ozdaglar, MIT

Achieving Network Stability and User Fairness Through Admission Control of TCP Connections

Andres Ferragut, Universidad ORT
Fernando Paganin, Universidad ORT

Short-term Fairness and Long-Term QoS

Bo Tan, University of Illinois at Urbana-Champaign
Lei Ying, Iowa State University
R. Srikant, University of Illinois at Urbana-Champaign

■ **FP-03**
Costas Arrays
Room F109

Chair: James K. Beard

Two Experimental Pearls in Costas Arrays

Konstantinos Drakakis, University College Dublin
Rod Gow, University College Dublin

Costas Permutations in the Continuum

Konstantinos Drakakis, University College Dublin
Scott Rickard, University College Dublin

Distance Vectors in Costas Arrays

Konstantinos Drakakis, University College Dublin
Rod Gow, University College Dublin
Scott Rickard, University College Dublin

Higher Dimensional Generalizations of the Costas Property

Konstantinos Drakakis, University College Dublin

Costas Array Generator Polynomials in Finite Fields

James K. Beard

Accelerated Costas Array Enumeration Using FPGAs

Jim G. Devlin, University College Dublin
Scott Rickard, University College Dublin

■ **FP-04**
Communication Systems
Room F108

Chair: Oren Somekh

Doubly-Selective MIMO Channel Estimation using Exponential Basis Models and Subblock Tracking

Hyosung Kim, Auburn University
Jitendra K. Tugnait, Auburn University

On Measuring Memory Length of the Error Rate Process in Wireless Channels

Muhammad U. Ilyas, Michigan State University
Hayder Radha, Michigan State University

On The Estimation of Doubly-Selective Fading Channels

Fengzhong Qu, University of Florida
Liuqing Yang, University of Florida

Reliability-Based TT&C Subsystem Design Methodology for Complex Spacecraft Missions

Erdem Demircioglu, Turksat A.S.
Mustafa M. Nefes, Turksat A.S.

Channel Modeling and Detector Design for Dynamic Mode High Density Probe Storage

Naveen Kumar, Iowa State University
Pranav Agarwal, University of Minnesota
Aditya Ramamoorthy, Iowa State University
Murti V. Salapaka, University of Minnesota

NOTES

Restaurants

Here is a listing of restaurants within a short walk from Friend Center.

Alchemist & Barrister

28 Witherspoon Street
American: bar serves until midnight
11:30 a.m.–10 p.m. daily
Sun 11 a.m.–3 p.m.
609-924-5555

The Bent Spoon

35 Palmer Square West
Ice cream and bakery
Sun 12 p.m.–10 p.m.,
Mon 11 a.m.–6 p.m.,
Tues–Thu 11 a.m.–10 p.m.,
Fri–Sat 11 a.m.–11 p.m.
609-924-2368

***Blue Point Grill**

258 Nassau Street
Fresh seafood, BYOB
Sun–Mon 5–9:30 p.m.
Tue–Sat 5–10 p.m.
609-921-1211

***Carousel Restaurant**

182 Nassau Street
Casual dining
6:30 a.m.–10 p.m. daily
609-924-2677

Ferry House

32 Witherspoon Street
Innovative American with European flair
Mon–Fri 11:30 a.m.–2:30 p.m.,
Mon–Sat 5 p.m.–10 p.m.
609-924-2488

Halo Pub

9 Hulfish Street
Fresh ice cream and coffee
7 a.m.–11 p.m. daily
609-921-1710

***Hoagie Haven**

242 Nassau Street
Deli: take out only
9:30 a.m.–1 a.m. daily
609-921-7723

Iano's Rosticceria

86 Nassau Street
Italian Pizzeria
10 a.m.–10 p.m. daily
609-924-5515

Ichiban Japanese

235 Nassau Street
Japanese
Mon–Fri 11:30 a.m.–10 p.m..

Sat 11:30 a.m.–11 p.m.,
Sun 2:30–10 p.m.
609-683-8323

***Ivy Garden**

238 Nassau Street
Chinese
609-683-2388

***Kaliente**

235B Nassau Street
Mexican, Indian
Mon–Fri 11a.m.–3p.m.
and 5p.m.–10p.m.,
Sat 12p.m.–10p.m.,
Sun 12–9p.m.
609-688-8916

***Kalluri Corner**

235A Nassau Street
Indian
Mon–Fri 11 a.m.–3p .m. and
5p.m.–10 p.m.,
Sat 12p.m.–10 p.m.,
Sun 12–9 p.m.
609-688-8923

Lahiere's

5 Witherspoon Street
Contemporary American/French
Mon–Fri 11:30–2:30 p.m.,
5:30–9:30 p.m.,
Sat 11:30–2 p.m.,
5:30–10:00 p.m.
609-688-2798

La Mezzaluna

25 Witherspoon Street
Italian
Sun–Th 11:30 a.m.–9 p.m.,
Fri–Sat 11:30 a.m.–10 p.m.
609-688-8515

Massimo's

124 Nassau Street
Italian Pizzeria
Mon–Thu 11 a.m.–10 p.m.,
Fri–Sat 11 a.m.–11 p.m.,
Sun 12 p.m.–9 p.m.
609-924-0777

Mediterra

29 Hulfish Street
Mediterranean
Mon–Thu 11:30–11 p.m.,
Fri–Sat 11:30–12 a.m.,
Sun 11:30–10 p.m.
609-252-9680

***Mehek ***

164 Nassau Street
Indian
Sun–Thu 11:30-3 p.m.
and 5:30-10 p.m.,
Fri–Sat 11:30-3p.m.,
5:30–10p.m.
609-279-9191

Nassau Sushi

179 Nassau Street
Japanese and Korean cuisine: eat in or take out
11:30 a.m.–2:30 p.m.,
4 p.m.–10 p.m. daily
609-497-3275

PJ's Pancake House

154 Nassau Street
Pancakes
Sun–Thu 7 a.m.–10 p.m.,
Fri–Sat 7 a.m.–12 a.m.
609-924-1353

***Small World Coffee**

254 Nassau Street
Coffeehouse
Mon–Thu 6:30 a.m.–
9:30 p.m.,
Fri–Sat 6:30 a.m.–11 p.m.,
Sun 7:30 a.m.–9:30 p.m.
609-924-4377

Sotto Ristorante & Lounge

128 Nassau Street
Italian
Mon–Sat 11:30 a.m.–
12 mid, Sun 4–9p.m.
609-921-7555

Starbucks Coffee Company

100 Nassau Street
Mon–Thu 6 a.m.–11p .m.,
Fri–Sat 6 a.m.–12 mid,
Sun 8a .m.–11 p.m.
609-279-9204

Teresa's Pizzetta and Café

21 Nassau Street East
Italian
Mon–Thu 11 a.m.–11 p.m.,
Fri–Sat 11 a.m.–12 a.m.,
Sun 12 p.m.–10 p.m.
609-921-1974

Thai Village

235 Nassau Street
Thai
Mon–Thu 11 a.m.–10 p.m.,
Fri–Sat 11 a.m.–11 p.m.,
Sun 11:30 a.m.–10 p.m.
609-683-3896

***Tiger Noodles**

260 Nassau Street
Chinese
11:30a.m.–10p.m. daily
252-0663

***Tomo Sushi**

236 Nassau Street
Sushi
Mon–Sat 11:30 a.m.–9:30 p.m.
609-924-8478

Triumph Brewery Company

138 Nassau Street
Local brewery: restaurant and bar
Mon–Sat 11:30 a.m.–Midnight,
Sun Noon–Midnight
609-924-7855

The Underground Café

4 Hulfish Street
French, Italian, Eastern European
Tue–Sun 11 a.m.–10 p.m.,
Closed Mondays
609-924-0666

J.B. Winberie

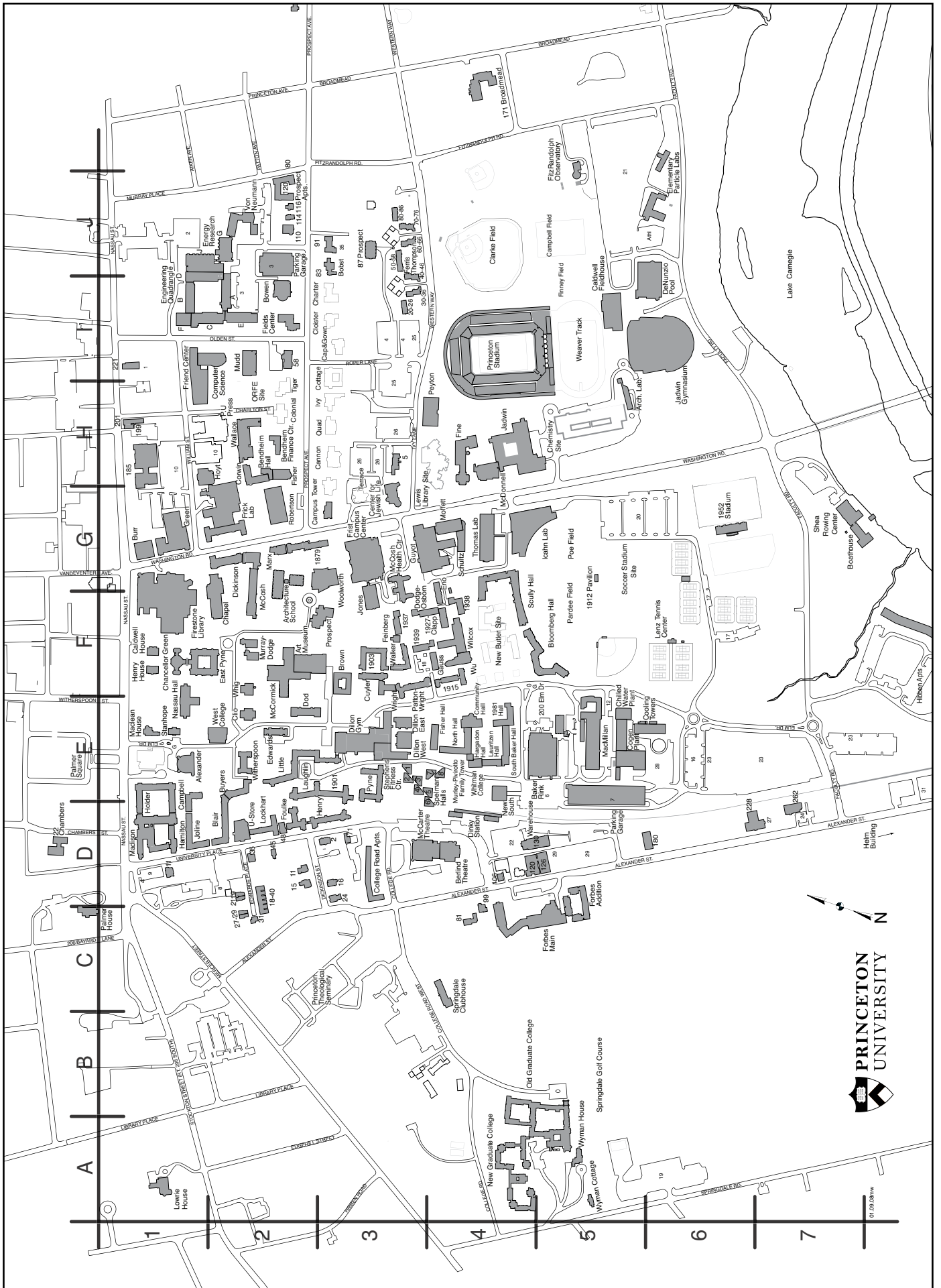
Palmer Square
American
Sun Brunch 10 a.m.–2 p.m.
Mon–Thu 11 a.m.–11 p.m.,
Fri–Sat 11 a.m.–12 a.m.,
Sun 10 a.m.–10 p.m.
609-921-0700

The Witherspoon Grill

57 Witherspoon Street
Steakhouse
Sun 12 p.m.–10 p.m.,
Mon–Tue 11 a.m.–10 p.m.,
Wed–Sat 11 a.m.–11 p.m.
609-924-6011

Yankee Doodle Tap Room

The Nassau Inn,
10 Palmer Square
Contemporary American
7 a.m.–10 p.m. daily
Bar open til 2 a.m.
609-921-7500



Administration: Dean of Admission, West College, E2; VP for Campus Life, Nassau Hall, E1; Dean of the Chapel, Murray-Dodge Hall, F2; Dean of the College, West College, E2; Dean of the Faculty, Nassau Hall, E1; Dean of the Graduate School, Clio Hall, E2; Dean of Undergraduate Students, West College, E2

Admission (undergraduate and graduate), Clio Hall, E2

Alumni Council, Maclean House, E1

Architecture, School of, G2

Art Museum, F2

Athletic event ticket office, Jadwin Gym, I6

Auditoriums: Betts, School of Architecture, G2; Dodds, Robertson Hall, G2; Helm, 50 McCosh Hall, G2; Richardson, Alexander Hall, E1; Taplin, Fine Hall, H4; Wood, 10 McCosh Hall, G2

Bus tickets, newsstand kiosk, Palmer Square, E1

Career Services, 201 Nassau St., H1

Communications, Office of, D0

Community and Regional Affairs, 22 Chambers St., D0

Daily *Princetonian*, 48 University Place, D2

Davis International Center, Frist Campus Center, G3

Employment, Human Resources, New South, E4

Engineering and Applied Science, School of, I1

Exhibits: Art Museum, F2; Firestone Library, F1; Mudd Library, I2

Fields Center for Equality and Cultural Understanding, 86 Olden St., I2

Financial aid, undergraduate, West College, E2

Food, phones, restrooms: Frist Campus Center, G3

Garden Theatre, G1

Gardens, Prospect, F3

Gymnasiums: Dillon, E3; Jadwin, I6

Health Center, McCosh, G3

Housing Office, MacMillan Building, E5

Human Values, University Center for, Marx Hall, G2

Information: Frist Campus Center, G3; Public Safety, 200 Elm Drive, E5; Communications Office, 22 Chambers St., D0

International Center, Frist Campus Center, G3

Jewish Life, Center for, G3

Library, Firestone, F1

Limousine (to Newark Airport), Nassau Inn, Palmer Square, E1

Lost and found, Public Safety, 200 Elm Drive, E5

Ombuds Office, 179 Nassau St., G1

Parking: visitor, garage (lot 7), E5 (campus shuttle stop); parking information: Public Safety, 200 Elm Drive, E5; TigerCard Office, A floor, New South, E4

President, Nassau Hall, E1

Princeton Alumni Weekly, 194 Nassau St., H1

Princeton Institute for the Science and Technology of Materials, Bowen Hall, I2

Princeton University Store (U-Store), D2

Princeton Weekly Bulletin (and calendar of events), Communications Office, 22 Chambers St., D0

Prospect House (and Gardens), F2

Provost, Nassau Hall, E1

Registrar, West College, E2

Restrooms: Frist Campus Center, G3; West College, E2

Security: Public Safety, 200 Elm Drive, E5

Snack bar, Frist Campus Center, G3

Taxi, Nassau St., E1

Teacher Preparation, Program in, 41 William St., H2

Telephones: Frist Campus Center, G3; Nassau Street, E1

Theatre: Berlind, D4; Garden, G1; Intime, Murray-Dodge Hall, F2; McCarter, D4

Train station (Dinky), D4

Treasurer, New South, E4

Women's Center, Frist Campus Center, G3

Woodrow Wilson School of Public and International Affairs, Robertson Hall, G2

Princeton University operator: 609-258-3000

Emergency: 911

Building Directory

5 Ivy Lane, H3

22 Chambers Street, D1

48 University Place, D2

58 Prospect Avenue, I2

71 University Place, D3

91 Prospect Avenue, J3

99 Alexander Street, C4

106 Alexander Street, D4

120 Alexander Street, D4

126 Alexander Street, D5

179 Nassau Street, G1

180 Alexander Street, D6

185 Nassau Street, H1

200 Elm Drive, E5

201 Nassau Street, H1

228 Alexander Street, D7

1879 Hall, G2

1912 Pavilion, G5

1952 Stadium, G6

Alexander Hall, E1

Architecture Laboratory, H5

Architecture School, G2

Art Museum, F2

Baker Rink, E5

Bendheim Center for Finance, H2

Bendheim Hall, H2

Berlind Theatre, D4

Boathouse, G7

Bobst Hall, J3

Bowen Hall, I2

Burr Hall, G1

Caldwell Fieldhouse, I5

Campus Club, G3

Chancellor Green, F1

Chapel, F2

Chilled Water Plant, E5

Clio Hall, E2

Cogeneration Plant, E5

College Road Apartments, D3

Computer Science, I2

Computing Center, J3

Cooling Towers, E6

Corwin Hall, H2

DeNunzio Pool, I6

Dickinson Hall, G2

Dillon Court East/West, E3

Dillon Gymnasium, E3

Dodge-Osborn Hall, F3

East Pyne, F2

Edwards Hall, E2

Elementary Particle Laboratory, J6

Elm Club, I2

Energy Research Laboratory, J2

Engineering Quadrangle, I1-2

Eno Hall, F4

Fields Center, I2

Fine Hall, H4

Firestone Library, F1

Fisher Hall, H2

FitzRandolph Observatory, J5

Nassau Hall, E1

New South Building, E4

Palmer House, C0

Parking Garage (Campus), E5

Parking Garage (Prospect Avenue), J2

Peyton Hall, H4

Princeton Stadium, I4

Princeton University Press, H2

Prospect House, F3

Robertson Hall, G2

Schulz Laboratory, G4

Scheide Caldwell House, F1

Shea Rowing Center, G7

Springdale Golf Club, C5

Stanhope Hall, E1

Stephens Fitness Center, E3

Thomas Laboratory, G4

Train Station (Dinky), D4

University Store, D2

Von Neumann Hall, J2

Wallace Hall, H2

Warehouse, D4

Weaver Track Stadium, I5

West College, E2

Whig Hall, F2

McCosh Health Center, G3

McDonnell Hall, H4

Moffett Laboratory, G4

Mudd Library, I2

Murray-Dodge Hall, F2

Nassau Hall, E1

New South Building, E4

Palmer House, C0

Parking Garage (Campus), E5

Parking Garage (Prospect Avenue), J2

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Whig Hall, F2

McCosh Health Center, G3

McDonnell Hall, H4

Moffett Laboratory, G4

Mudd Library, I2

Wyman House, A5

WHITMAN COLLEGE

1981, E4

Community, E4

Fisher, E4

Hargadon, E4

Lauritzen, E4

Murley-Pivrotto, E4

North, E4

South Baker, E4

WILSON COLLEGE

Class of 1927-Clapp, F4

Class of 1937, F3

Class of 1938, F4

Class of 1939, F3

Dodge-Osborn, F3

Fernberg, F3

Gauss, F4

Walker, F3

Wilcox, F4

Undergraduate Residential Colleges

BUTLER COLLEGE

Bloomberg, F5

Class of 1915, F4

Cuyler, F3

Wu, F4

FORBES COLLEGE, C5

MATHEY COLLEGE

Blair, D2

Campbell, E1

Edwards, E2

Hamilton, D1

Joline, D1

Little, E2

ROCKEFELLER COLLEGE

Buyers, E2

Campbell, E1

Holder, E1

Little, E2

Madison, D1

Witherspoon, E2

Upperclass Dormitories

1901-Laughlin, E3

1903, F3

2 Dickinson Street, D3

Brown, F3

Dod, E2

Foulke, D2

Henry, D3

Little, E2

Patton-Wright, F3

Pyne, E3

Scully, F4

Spelman, E3

Walker, F3

Graduate College

Residential and dining complex, A4

Wyman House, A5

Eating Clubs

Cap and Gown, I3

Charter, I3

Cloister, I3

Colonial, H2

Cottage, I3

Ivy, H3

Quadrangle, H3

Terrace, G3

Tiger Inn, H2

Tower, G3



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