SERVING HUMANITY THROUGH COMMUNICATIONS

May 1-5, 1994
Ernest N. Morial Convention Center
New Orleans, Louisiana, USA

SUPERCOMM/ICC '94

SUPERCOMM/ICC '94 is sponsored by:
IEEE Communications Society
IEEE New Orleans Section
Telecommunications Industry Association
United States Telephone Association
### Session 301
**Modulation and Coding for Multipath Fading Channels**

**ORGANIZER:** E. Biglieri, Politecnico, Italy  
**CHAIR:** E. Biglieri  
**SPONSOR:** Communication Theory

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>301.1</td>
<td>Maximum Likelihood Sequence Estimation of Uncoded and Coded PSK Signals Transmitted Over Raleigh Flat-Fading Channels</td>
<td>G.M. Vitetta, University of Pisa, Italy; D. P. Taylor, University of Canterbury, New Zealand</td>
</tr>
<tr>
<td>301.2</td>
<td>Concatenated Coding and ARQ Systems Using TCM for Rayleigh Fading</td>
<td>C. Tellambura, V.K. Bhargava, University of Victoria, Canada</td>
</tr>
<tr>
<td>301.3</td>
<td>The Design of Trellis Codes for Multipath Fading ISI Channels with MLSE Receivers</td>
<td>K. Hamied, G. L. Stuber, Georgia Tech, USA</td>
</tr>
<tr>
<td>301.4</td>
<td>Coded Modulation for Channels Affected by Noise, Correlated Rice Fading and Doppler Frequency Shift</td>
<td>E. Biglieri, Politecnico di Torino, Italy; V. Zingarelli, Alenia, Italy</td>
</tr>
<tr>
<td>301.5</td>
<td>Sequential Reconstruction of Vector Quantized Signals Transmitted Over Rayleigh Fading Channels</td>
<td>F. H. Liu, P. Ho, V. Cuperman, Simon Fraser University, Canada</td>
</tr>
<tr>
<td>301.6</td>
<td>Optimal Trellis-Coded 8-PSK and 4-AM Modulations for the Rayleigh Channel</td>
<td>A. Brajal, A. Chouly, Laboratoires d'Electronique Philips, France</td>
</tr>
<tr>
<td>301.7</td>
<td>A Novel Bandwidth Efficient Analog Coding/Decoding Scheme for Data Transmission Over Fading Channels</td>
<td>A. Wittneben, Ascom Tech Ltd., Switzerland</td>
</tr>
</tbody>
</table>

### Session 302
**Traffic Modeling and Analysis of ATM Networks**

**ORGANIZER:** C. Douiigeris, University of Miami, USA  
**CHAIRS:** I. Lambadaris, Carleton University, Canada; R. Kaye, Carleton University, Canada  
**SPONSOR:** Computer Communications

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>302.1</td>
<td>Random Access for ATM LANs and WANs</td>
<td>I. Widjaja, University of Toronto, Canada</td>
</tr>
<tr>
<td>302.2</td>
<td>A Distributed Routing and Access Control Scheme for ATM Networks</td>
<td>R. Bolla, F. Davoli, M. Marchese, University of Genoa, Italy</td>
</tr>
<tr>
<td>302.3</td>
<td>A Cell-based Flow Control Scheme for DQDB Interconnections Across an ATM Switch</td>
<td>N. F. Huang, C. S. Wu, National Tsing Hua University, ROC; G. K. Ma, Computer &amp; Comm. Research Labs, ROC</td>
</tr>
<tr>
<td>302.4</td>
<td>Inter-Process Communication Performance in High-Speed Networks</td>
<td>V. Trecordi, Politecnico di Milano, Italy</td>
</tr>
<tr>
<td>302.5</td>
<td>Buffer Sizing of a CRMA/ATM Interworking Unit Adopting a Loss Free Access Scheme</td>
<td>F. Bernabei, L. Gratta, Fondazione Ugo Bordoni, Italy; M. Listanti, University of Roma, Italy; M. Moscatelli, Fondazione Ugo Bordoni, Italy; L. Proietti, Ericsson Fatme, Roma, Italy</td>
</tr>
<tr>
<td>302.6</td>
<td>A Distributed FIFO Spacer/Multiplexer for Access to Tree APONS</td>
<td>J. D Angelopoulos, I. S. Venieris, E.N. Protonotarios, Nat'l Tech. University of Athens, Greece</td>
</tr>
</tbody>
</table>
Session 303

Advances in ATM Network Design

ORGANIZER: M. Devetsikiotis, Carleton University, Canada
CHAIR: M. Devetsikiotis, Carleton University, Canada
SPONSOR: Communications Systems Engineering

303.1 Real Time Call Admission Control for ATM Networks with Heterogeneous Bursty Traffic

303.2 Resource Allocation in Broadband Networks - Cell, Burst Or Connection Level?
R. Krishnan, J.A. Silvester, University of Southern California, USA

303.3 A Fast ATM Rerouting Algorithm for Networks with Unreliable Links
C.K. Jones, R.R. Henry, University of Southwestern Louisiana, USA

303.4 A Fast Algorithm for Multi-channel/Port Traffic Assignment
M. Chen, N.D. Georganas, O. W. W. Yang, University of Ottawa, Canada

303.5 A Shared-Buffer Direct-Access (SBDA) Switch Architecture for ATM-based Networks
S. Kumar, D. P. Agrawal, North Carolina State University, USA

303.6 Worst Deterministic Pattern Allocation: A Viable Approach to Attain Statistical Gain in ATM
A. Batocchi, N. Blefari-Melazzi, F. Coumo, M. Listanti, University of Roma, Italy

Session 304

Advanced Optical Technologies 1

ORGANIZERS: H. Izadpanah, Bellcore, USA
H. A. Pacuillo, CNET, France
CHAIR: H. Izadpanah
SPONSOR: Optical Communications

304.1 Video Multiplexing Using Pulsed Coded Fiberoptics
R. Gagliardi, University of Southern California, USA; M. Dale, TASC Corp., USA

304.2 Photonic Networks with Pulsed Lightwave Frequency Supply Module
K. Nakagawa, K. Aida, Y. Yamabayashi, NTT Trans. Systems Laboratories, Japan

304.3 Performance of Coded Multi-pulse PPM with Imperfect Slot Synchronization in Optical Direct Detection Channel
K. Sato, T. Ohtsuki, I. Sasase, Keio University, Japan

304.4 Reed-Solomon Coded Optical PPM Employing PIN-FET Receivers
R. A. Cryan, J. M. H. M. O. Elmirghani, Manchester Metropolitan University, England

304.5 LMS Electrical Filters to Reduce Intersymbol Interference in Direct Detection Optical Systems
P.C. Li, P. A. Humblet, Massachusetts Institute of Technology, USA

304.6 Construction & Performance Analysis of a New family of Optical Orthogonal Codes with Ideal Auto and Cross-Correlation Functions for Use in CDMA Fiber-Optic LANs
S. V. Marie, City College of the City University of N.Y., USA; M. D. Hahm, E. L. Titlebaum, University of Rochester, USA

Session 305

Quality of Broadband Networks and Services

ORGANIZER: R. Kositpaiboon, Bell Northern Research, Canada
CHAIR: R. Kositpaiboon
SPONSOR: Quality Assurance
305.1 The Berkom-II FlowSpec and Its Mapping on ATM
   S. Damaskos, A. Gavras, National Research Corp for Math & Data, Germany .................. 141
305.2 Evolution and Service Requirements of CBR Applications on ATM Networks
   S. I. A. Shah, P. Ashton, M. Werntik, Bell Northern Research, Canada .................. 147
305.3 Mapping Distributed Interactive Simulation Network Requirements Onto Broadband
   Networks and Services
   T. L. Gehl, IBM, USA .................. 154
305.4 A QoS Selector for Multimedia Applications on ATM Networks
   D. Dubois, N. D. Georganas, University of Ottawa, Canada; R. Horlait, Universite Pierre et
   Marie Curie, France .................. 160
305.5 A Methodology for Virtual Path and Virtual Network Bandwidth Assignment in Broadband
   Networks with QOS Guarantees
   J. Hyman, A. Lazar, G. Pacifici, Columbia University, USA .................. 165
305.6 Cell Loss Ratio Commitments in ATM Networks
   A. Gravey, G. Hebuterne, CNET, France .................. 170
305.7 An Investigation Into Fault Recovery in Guaranteed Performance Service Connections
   C. J. Parris, A. Banerjea, International Comp. Science Institute, USA .................. 175

Session 306
Mobility and Resource Management

ORGANIZER: I. Chih-Lin, AT&T Bell Labs, USA
CHAIRS: I. Chih-Lin
V. K. Varma, Bellcore, USA
SPONSORS: Radio Communications
           Personal Communications Committee

306.1 A Novel Priority Queue Scheme for Handoff Procedure
   Y. Jun, Concordia University, Canada; S. Cheng, Southeast University, China .................. 182
306.2 Implicit Deregistration in a PCS Network
   Y. Lin, A. Noerpel, Bellcore, USA .................. 187
306.3 A Protocol for Seamless Communication in a Picocellular Network
   R. Ghai, S. Singh, University of South Carolina, USA .................. 192
306.4 How to Assign Service Areas in a Cellular Mobile Telephone System
   I. A. Cimet, Motorola, USA .................. 197
306.5 Comparison of Upgrade Techniques for Mobile Communication Systems
   M. Tangemann, R. Rheinschmitt, Alcatel Sel Research Centre, Germany .................. 201
306.6 Performance of Distributed Control Channel Allocation (DCCA) Under Non-Uniform Traffic
   Conditions in Microcellular Radio Communications
   K. Madani, University of Westminster, UK; H. Aghvami, King's College, UK .................. 206

Session 307
Information Compression for Multimedia Communications

ORGANIZER: V. Cuperman, Simon Fraser University, Canada
CHAIRS: V. Cuperman
J. H. Derby, IBM, USA
SPONSOR: Signal Processing and Communication Electronics
           Multimedia Services and Terminals
ATM Video: Performances and Error Control
G. Benelli, L. Favalli, A. Mecocci, P. Parise, Universita di Pavia, Italy

A Variable-Rate Natural-Quality Parametric Speech Coder
A. Das, A. Gersho, University of California, USA

Removal of Subjective Redundancy by Adaptive Quantization of DCT Coefficients
H. Bi, G. Bi, Y. Mao, Southeast University, China

Interleaved Forward Error Correction for Variable Bit Rate Video Coding
H. Harasak, M. Yano, NEC Corporation, Japan

Efficient Decoding of Correlated Sources with Application to DPCM Image Coding
S. Emami, S. Miller, University of Florida, USA

On Wavelet-Based Multiresolution Image Compression
P. P. Gandhi, Villanova University, USA

Efficient Algorithms for Fixed-Rate Entropy-Coded Vector Quantization
A.K. Khandani, University of Waterloo, Canada; P. Kabal, McGill University &
INRS-Telecommunications, Canada; E. Dubois, INRS-Telecommunications, Canada

Session 308A
Equalization and Detection for Storage Channels 1

Modified Maximum Likelihood Sequence Estimation in a Simple Partial Erasure Model
I. Lee, Stanford University, USA; T. Yamaguchi, Mitsubishi Kasei Co., Japan; J. M. Cioffi, Stanford
University, USA

Nonlinear Equalization for Data Storage Channels
S. K. Nair, J. Moon, University of Minnesota, USA

Signal Processing for a High-Data-Rate of 198-Mb/s Recording Channel
M. Umemoto, H. Ishtii, Hitachi, LTD, Japan

Session 308B
Distributed, Fault-Tolerant Software Platforms to Support the Development and
Deployment of Real Time Network Service

A Reuse-Driven Service Creation Environment for the Advanced Intelligent Network
B. S. Ku, DSC Communications Corp., USA

Implementation of Telecommunication Configurations
I. G. Reyniers, Alcatel Bell, Belgium

An Object-Oriented Interface for a Distributed Connection Manager
P. Mouchtaris, S. L. Mayer, G. D. Flinchbaugh, W. E. Leland, D. Pomplun, A. Weinrib, Bellcore, USA

Design and Implementation of a Distributed Call Processing Architecture
T. F. La Porta, M. Veeraraghavan, AT&T Bell Laboratories, USA
Session 309
High Speed Copper Transport

ORGANIZER: T. Starr, Ameritech, USA
CHAIR: T. Starr
SPONSOR: Transmission Systems

309.1  Signal Processing Design for an ADSL High Speed Equalizer
D. C. Jones, Bellcore, USA .............................................................. 283

309.2  An Efficient FSE/DFE-based HDSL Equalizer with New Adaptive Algorithms
C. I. Hwang, T. C. Tang, D. W. Lin, S. G. Chen, National Chiao Tung University, ROC .... 288

309.3  Analysis of Clipping Effect in DMT-Based ADSL Systems
D. J. G. Mestdagh, P. Spruyt, B. Biran, Alcatel-Bell Research Center, Belgium .............. 293

309.4  Echo Cancellation for Asymmetrical Digital Subscriber Lines
R.C. Younce, P. J.W. Melsa, S. Kapoor, Tellabs Research Center, USA ......................... 301

309.5  Timing Recovery for Echo-Cancelled Discrete Multitone Systems
M. Ho, J. M. Cioffi, Stanford University, USA ........................................ 307

309.6  DMT Systems, DWMT Systems and Digital Filter Banks
M. A. Tzannes, M.C. Tzannes, Aware, Inc., USA; J. G. Proakis, Northeastern University, USA; P. N. Heller, Aware, Inc., USA ................................. 311

Session 310
Radio Link Design and Analysis

ORGANIZER: D.P. Taylor, University of Canterbury, New Zealand
CHAIR: D.P. Taylor
SPONSOR: Communication Theory

310.1  Symbol-Aided Channel Estimation with Nonselective Rayleigh Fading Channels
A. N. D’Andrea, A. Diglio, U. Mengali, University of Pisa, Italy .................................. 316

310.2  Error Performance Analysis of MLSE for Frequency-Selective Rayleigh Fading Channels with Kalman Channel Estimation
M. E. Rollins, S.J. Simmons, Queen’s University, Canada ............................................ 321

310.3  Bit Error Probability Approximation for DS/CDMA with M-ary Orthogonal Modulation in Multipath Fading Channels
L. M. A. Jalloul, J. M. Holtzman, Rutgers University, USA ......................................... 327

310.4  Modified Intersymbol Interference Cancellation for Digital Microwave Radio
P.M.S. Burt, University of Sao Paulo, Brazil ......................................................... 332

310.5  Computationally Efficient Asymptotic and Accurate Approximate Expressions for the Matched Filter Bound for (Un) coded MPSK Transmission on Multipath Fading Channels
K. Wuyts, M. Moeneclaey, University of Ghent, Belgium ............................................ 337

310.6  On Diversity Combining for Correlated Slowly Flat-Fading Rayleigh Channels
E. Perahia, G.J. Pottie, UCLA, USA .............................................................. 342

310.7  Applications of Reduced State Sequence Estimation to Terrestrial Digital Radio Links
G. Marino, R. Raheli, Universita di Parma, Italy; G.B. DiDonna, Siemens Telecomunicazioni, Italy; G. Picchi, Universita di Parma, Italy .................................................. 347

Session 311
Continuous Phase Modulation

ORGANIZER: G. Stuber, Georgia Institute of Technology, USA
CHAIRS: G. Stuber, F. Abrishamker, AT&T Bell Laboratories, USA
SPONSOR: Communications Theory
311.1 A Partially Coherent CPM Receiver with Cochannel Interference
  G.P. Chapelle, TRW Military Elec. & Avionics Div., USA; L.B. Milstein, University of California,
  San Diego, USA ................................................................. 353

311.2 A Double Half-Bandwidth OFDM System for Digital Video Broadcasting
  D. Di Zenobio, Fondazione Ugo Bordoni, Italy ......................................... 358

311.3 Nonlinear Multi-Phase Codes for Full Response and Partial Response CPFSK Modulation
  R. Mao, J.P. Fonseka, University of Texas at Dallas, USA ................................ 363

311.4 Nonlinear Multi-Pulse Block Coding of CPFSK Signals
  J.P. Fonseka, University of Texas at Dallas, USA ......................................... 369

311.5 OFDM with Guard Interval and Sub-Channel Equalization in a 2-Resolution Transmission Scheme
  for Digital Television Broadcasting
  G. Santella, Fondazione Ugo Bordoni, Italy .............................................. 374

311.6 The Behavior of Orthogonal Frequency Division Multiplexing Signals in an Amplitude Limiting
  Channel
  J. Rinne, M. Renfors, Tampere University of Technology, Finland ...................... 381

311.7 A Nonlinear Filtering Approach to Carrier Tracking and Symbol Detection in Digital Phase
  Modulation
  J.M.N. Leitao, F.D. Nunes, Instituto Superior Tecnico, Portugal ......................... 386

Session 312
ATM Switch Architectures
ORGANIZERS: J.F. Labourtette, AT&T Bell Labs, USA
             T. Chen, GTE, USA
CHAIR: I. Khan, SRI, USA
SPONSOR: Computer Communications

312.1 PVC Reservation On Shared Buffer Type ATM Switch for Data Communication
  T. Kozaki, M. Miyagi, I. Kohashi, Hitachi, Ltd, Japan ................................. 391

312.2 The Expanded Delta Fast Packet Switch
  R.Y. Awdeh, H.T. Mouftah, Queen’s University at Kingston, Canada .................... 397

312.3 Expandable ATOM Switch Architecture (XATOM) for ATM LANs

312.4 ATM Framing Using CRC Byte
  D.E. Dodds, TR Labs, Canada; L. Du, University of Saskatchewan, Canada ............... 410

312.5 Nonblocking Multi-Channel Switching in ATM Networks
  H. Saidi, P.S. Min, Washington University, USA; M.V. Hegde, Louisiana State University, USA ........ 415

312.6 Design and Performance Analysis of an Output-Buffering ATM Switch with Complexity of
  O(Nlog2N)
  R.Y. Awdeh, H.T. Mouftah, Queen’s University, Canada .................................. 420

312.7 Detection and Location for Single Faults in Bitonic Sorters
  T.H. Lee, J.J. Chou, National Chiao Tung University, China ............................. 425

Session 313
High Speed Copper Transmission: System and Implementation Issues
ORGANIZER: T. Starr, Ameritech, USA
CHAIR: T. Starr
SPONSOR: Transmission Systems
313.1 The Operations and Maintenance Aspects of High-Speed Copper Access Transmission Systems
P. F. Adams, K. T. Foster, M. Hind, BT Labs, UK

313.2 Maintenance of Asymmetrical Digital Subscriber Lines (ADSLs)
J. G. Gruber, BNR, Canada

313.3 The Range of HDSLs and ADSLs in NTT's Local Networks
S. Yamano, NTT Trans. Systems Laboratories, Japan

313.4 ADSL Noise Environment and Potential System Performance
W. Y. Chen, D. L. Waring, Bell Communications Research, USA

313.5 A Multi-Drop In-House ADSL Distribution Network
P. S. Chow, J. M. Cioffi, Amati Corporation, USA

313.6 An HDSL Chipset for High-Speed Transmission Over Copper
D. Essig, T. Lindenfelser, E. Rokach, W. Liu, P. Lou, D. Moran, B. Seago, Brooktree
Corporation, USA

Session 314
Survivable Networks

Organizer: V. Sahin, NEC America, Inc., USA
Chair: V. Sahin
Sponsor: Network Operations and Management

314.1 Guided Restoration of ATM Cross-Connect Networks
M. M. Slominski, H. Okazaki, NEC Corporation, Japan

314.2 Mesh/ARC Networking: An Architecture for Efficient Survivable Self-Healing Networks
G. N. Brown, BT Labs, UK; W. D. Grover, J. B. Slevinsky, TR Labs, Canada; M. H. MacGregor;
BT Labs, Canada

314.3 Design of Hierarchical Self-Healing Ring Networks
J. Shi, J. P. Fonseka, University of Texas at Dallas, USA

314.4 Distributed Restoration Strategies in Telecommunications Networks
D. Johnson, G. N. Brown, S. L. Beggs, C. P. Botham, I. Hawker, BT Labs, UK;
R. S. K. Chng, M. C. Sinclair, M. J. O'Mahony, University of Essex, UK

314.5 SONET Bidirectional Ring Capacity Analysis: A Pragmatic View
B. E. Smith, Southwestern Bell Tech. Resources, USA; C. Yackle, Southwestern
Bell Telephone Co., USA

Session 315
Performance Issues of Spread Spectrum Technologies for PCS
and Cellular Systems

Organizers: T. Hattori, NTT, Japan
G. Atkin, Illinois Institute of Technology, USA
Chair: T. Hattori, G. Atkin
Sponsor: Radio Communications

315.1 Analysis of Slotted Frequency-Hopped Packet Radio Networks with Random and Deterministic
Hopping Patterns
K. A. Mohamed, L. Pap, Technical University of Budapest, Hungary

315.2 Frequency-Hopped Spread-Spectrum Multiple Access Communications With Adaptive
Retransmission Control
J. G. Kim, S. W. Kim, Korea Advance Institute of Science & Technology, Korea

315.3 On Spectral Efficiency of CDMA Mobile Radio Systems
F. Behbahani, H. Hashemi, Sharif University of Technology, Iran
315.4 Performance Comparison of a DS/CDMA System Using a Successive Interference Cancellation (IC) Scheme and a Parallel (IC) Scheme Under Fading
P. Patel, J. Holtzman, Rutgers University, USA ........................................... 510

315.5 On the Bandwidth Efficiency of CDMA Systems
A. Jalali, BNR, Canada; P. Mermelstein, INRS Telecommunication, Canada ................ 515

315.6 Performance Analysis of Near-Far Resistant CDMA Detectors--Influence of System Parameter Estimation Errors
F. C. Zheng, S. K. Barton, University of Bradford, UK ........................................ 520

315.7 The Efficiency of FFH/CDMA Systems in a Mobile Radio Environment
U.-C. Fiebig, Institute for Communication Technology, Germany .......................... 525

Session 316
Equalization Techniques

ORGANIZER: Z. Kostic, AT&T Bell Labs, USA
CHAIR: K. Sistinizadah, Bell Atlantic, USA
SPONSOR: Signal Processing and Communication Electronics

316.1 Adaptive Bayesian Decision Feedback Equalizer Incorporating Co-Channel Interference Compensation
S. Chen, S. McLaughlin, B. Mulgrew, P. M. Grant, University of Edinburgh, Scotland ........ 530

316.2 A New Modular Fast Transversal Filter for Decision Feedback Equalization of Dispersive Channels
C. B. Tripathi, D. K. Mehra, University of Roorkee, India .................................. 534

316.3 Recursive Bayesian Techniques for Blind Equalization
G. K. Lee, Industrial Tech. Research Inst., Taiwan; S. B. Gelfand, M. P. Fitz, Purdue University, USA 539

316.4 A New Algorithm for Fast Blind Equalization of Wireless Communication Channels
G. Xu, University of Texas at Austin, USA; L. Tong, University of Connecticut, USA; H. Liu, University of Texas at Austin, USA ................................................ 544

316.5 A Parallel Multimodel CMA/Godard Adaptive Filter Bank Approach to Fractionally-Spaced Blind Adaptive Equalization
J. K. Tugnait, Auburn University, USA ............................................................. 549

316.6 New Results with Fractionally-Spaced Blind Equalization Algorithms
Y. Chen, Rockwell Int'l. USA; C. L. Nikias, USC, USA ........................................ 554

Session 317
Wireless Multimedia

ORGANIZERS: J. H. Derby, IBM Corporation, USA
R. A. Nobakht, IBM Corporation, USA
CHAIRS: J. H. Derby
R. A. Nobakht
SPONSOR: Multimedia Services and Terminals

317.1 ATM Based Transport Architecture for Multiservices Wireless Personal Communication Networks
D. Raychaudhuri, NEC USA, Inc., USA ............................................................. 559

317.2 Packet Diversity Techniques for a Broadband ATM-Oriented Radio Indoor Environment
G. M. Stamateles, D. D. Falconer, Carleton University, Ottawa, Canada ................. 566

317.3 Robust Low Bit-Rate Video Transmission Over Wireless Access Systems
M. Khansari, A. Jalali, E. Dubois, P. Mermelstein, INRS-Télécommunications, Canada ... 571

317.4 Enhanced Channel Coding Using Source Criteria in Speech Coders
I. K. Ong, A. M. Kondoz, B. G. Evans, University of Surrey, UK ......................... 576
317.5 A PRMA Integrated Voice And Data System with Data Steal Into Voice (DSV) Technique
G. Wu, K. Mukumoto, A. Fukuda, Shizuoka University, Japan .......................................................... 580

317.6 A Retransmission Scheme for Circuit-Mode Data on Wireless Links
S. Nanda, R.P. Ejzak, B.T. Doshi, AT&T Bell Laboratories, USA ....................................................... 587

317.7 Performance of Multi-Bearer Connections for Varied Data Services in a TDMA System
P. Wong, Univ. of Science & Technology, Hong Kong; A. Lasa, F. Halsall, University of Swansea, UK; G. Schultes, Technische Universitat Wien, Austria .......................................................... 593

Session 318
Broadband ISDN Experimentation and Service

ORGANIZER: W.A. Payne III, AT&T Bell Laboratories, USA
CHAIR: W.A. Payne III
SPONSOR: Communications Switching

318.1 A Laboratory Plant for Experimenting Broadband Communications in an ATM Environment
M. Decina, Cefriel-Politecnico di Milano, Italy; C. Mossotto, Csetl-Centro Studi e Lab Telecom., Italy; A. Roveri, CNR-Projecto Finalizzato Telecom., Italy .......................................................... 598

318.2 A Field Trial for Laboratory Experimental Broadband Switching System
L.S. Liang, L.-P. Chin, C.S. Lin, C.C. Yen, Telecommunication Laboratories, ROC .............................. 603

318.3 ATM Virtual Private Networks: Alternatives and Performance Comparisons
P. Crocetti, Italtel, Italy; L. Fratta, Politecnico di Milano, Italy; G. Gallassi, Italtel, Milan, Italy; M. Gerla, UCLA, USA .......................................................... 608

318.4 System and Performance Design of the ATM Node UT-XC
M. Collivignarelli, A. Daniele, G. Gallassi, F. Rossi, G. Valsecchi, L. Verri, Italtel, Italy ......................... 613

318.5 A Study on the Architecture of a Network Adapter
T. Nisase, H. Fujiya, T. Mizuno, NTT Communication Switching Labs, Japan ................................. 619

318.6 Link Set Capacity Augmentation Algorithms for Networks Supporting SMDS
F.Y.S. Lin, Bellcore, USA .......................................................... 624

Session 319
Coded Modulation Techniques

ORGANIZER: H. Sari, Societe Anonyme de Telecommunication, France
CHAIR: H. Sari
SPONSOR: Communication Theory

319.1 Combined Trellis Shaping and Coding to Control the Envelope of a Bandlimited PSK-Signal
M. Litzenburger, W. Rupprecht, University of Kaiserslautern, Germany ......................................... 630

319.2 A Quaternary Constant-Envelope Modulation with 4-D Trellis Coding
H. Sari, V. Paxal, G. Karam, Societe Anonyme de Telecommunications, France ............................... 635

319.3 Multilevel Coded FSK/PSK Modulation
I. Altunbas, U. Aygoz, Istanbul Technical University, Turkey ......................................................... 640

319.4 Turbo-Codes and High Spectral Efficiency Modulation
S. Le Goff, A. Glavieux, C. Berrou, France Telecom University, France .......................................... 645

319.5 Computing Upper Bounds to Error Probability of Coded Modulation Schemes
E. Biglieri, Politecnico di Torino, Italy; A. Sandri, Alcatel-Teletra, Italy; A. Spalvieri, Politecnico di Milano, Italy .......................................................... 650

319.6 Evaluation of the Performance of Error-Correcting Codes on a Gilbert Channel
J. R. Yee, E. J. Weldon, Jr., University of Hawaii at Manoa, USA .................................................. 655