

## **Prof. Costas A. Courcoubetis – Curriculum Vitae**

**Department of Informatics**  
**Athens University of Economics and Business**  
*Evelpidon 47a and Lefkados 33, Athens 11362*  
*Tel.: +30 210-8203653 (office)*  
*+30 6944-357951 (mobile)*

[courcou@aueb.gr](mailto:courcou@aueb.gr)  
[www.nes.aueb.gr](http://www.nes.aueb.gr)  
[www.aueb.gr/users/courcou](http://www.aueb.gr/users/courcou)



### **Professional Experience**

- 1999 - present: **Professor**, Department of Informatics, Athens University of Economics and Business (AUEB), **Director**, Theory, Economics and Systems Lab at AUEB, and Head, Network Economics and Systems Group.
- 1990-1999: **Professor**, Department of Computer Science, University of Crete, Heraklion, Greece.
- 1990-2000: **Head**, Telecommunications and Networks Division, Institute of Computer Science, FORTH, Greece.
- 1982-1990: **Member of Technical Staff**, Mathematical Sciences Research Centre, AT&T Bell Laboratories, Murray Hill, USA.

#### **Other academic positions:**

- 1990 (Fall): **Visiting Professor**, IMAG, Grenoble, France. Conducted research in the area of timed automata and algorithmic verification.
- 1986 (Spring): **Visiting Lecturer**, University of California, Berkeley, USA. Taught a course on formal specification and verification of computer communication protocols.
- 1986 (Fall): **Adjunct Assistant Professor**, Columbia University, USA. Taught a course on distributed computing and problem solving.

### **Research Interests**

- **Pricing of network services and network economics.** Pricing is considered as an important tool for improving network performance by controlling congestion and incentivizing the adoption of new efficient protocols. Network economics and game theory define the framework for obtaining fairness in terms of network resource usage, defining incentive compatible pricing schemes, and leading to a multi-service self-managed Internet.
- **Regulation** in telecommunications, with emphasis to network costing, auctions, network neutrality.
- **Performance models for broadband networks** using applied probability models, optimization and operations research.
- **Grid economics and resource sharing.** Economic and business issues in the new computing paradigm, where infrastructures are shared and software applications and hardware are provided as services in open markets.
- **Formal methods for the specification and verification of concurrent systems with emphasis in systems with real-time and randomization.** Development of efficient algorithms and tools for the verification of real-time systems such as computer communication protocols, asynchronous circuits, switching software. Real-time extensions of temporal logic and automata.
- **Other recent interests:** smart grids and the economics of demand/response, sensor networks.

## Education

- 1977-1982  
**MS, Ph.D. in Electrical Engineering and Computer Science**, University of California, Berkeley, USA.
- 1972-1977  
**Diploma of Electrical and Mechanical Engineering**, National Technical University of Athens, Greece.

## Teaching

Taught the following courses: introduction to computer science, compiler construction, operating systems, theory of computation, communication networks, network management (graduate), theory of concurrency and formal methods for the specification and verification of concurrent systems (graduate), topics in ATM networks (graduate, with emphasis on economic models and pricing), network economics (graduate), topics in regulation for telecommunications (graduate), e-commerce technologies (graduate), modern trends in telecommunications (Executive MBA program).

## Tutorials

- “Pricing and Economics of Networks”, **INFOCOM 1998**.
- “Pricing models for Network Services”, **ITC 1999**.

## Research Projects

### A. EU-funded Research Projects (recent)

- **WATTALYST**: Modelling and analyzing demand response systems, 425,000€ (1/10/2011-30/9/2014).
- **SESERV**: Socioeconomic services for European research projects, 178,000 € (1/9/2010-31/8/2012).
- **TRILOGY**: Developing a new control architecture for the Internet, 706,000 € (1/1/2008-31/3/2011).
- **ETICS**: Economics and Technologies for Inter-Carrier Services, 614,000 € (1/1/2010 – 31/12/2012).
- **GRIDECON**: Grid Economics and Business Models, 385,000 € (1/7/2006 – 30/4/2009).
- **BEINGRID**: Business Experiments in GRID, 228,000 € (1/6/2006-30/11/2009).
- **MMAPS**: Market-Managed Peer-to-Peer Services, 480,000 € (1/4/2002-30/9/2004).
- **M3I**: A market-managed multiservice Internet, 407,000 € (1/1/2000-31/12/2001).
- **ACTS and RACE programs**:
  - **CASHMAN**: (1995-1998) Technical Manager (Charging models for multi-service ATM networks).
  - Other projects: **REFORM, MONTAGE, ITHAcI, ICM, NEMESYS**.
- **ESPRIT BRA programs**:
  - **SPEC, REACT**: development of algorithms and tools for the specification and verification of reactive, real-time systems, head of ICS-FORTH research team.

### B. National Committee of Telecommunications (Greek Telecom Regulator)

- Responsible for the initial study for the Unbundling of the Local Loop in Greece.
- Collaborated in the design of the LMDS spectrum auction.
- Defined the methodology for assigning fines to telecom operators

### C. Regulatory Authority for Energy RAE (Greek Energy Regulator)

- Design of auction for the rights of importing power from the northern Greek frontier.
- Design of auction for the procurement by DESMIE of contracts of guaranteed income from selling electric power in the daily market by the new power plant operators.
- Study for the regulated access to low cost lignite production by the Greek National Energy Operator.

## Awards

- 2010 Test-of-Time Award, Springer Verlag.
- Best Teaching Award, Executive MBA (AUEB), 2002, 2004.

## Key Professional Activities

- A. Member of the University Counsel, Athens University of Economics and Business (2012).**
- B. Member of the Greek National Research Council (2005).**
- C. Director, Centre for Telecommunications and Networks, University of Crete.** Responsible for the planning, implementation and support of the complete networking infrastructure (local networks and fibre backbone) of the University of Crete located at Heraklion and Rethymnon.
- D. Consultant projects (selected)**
- Greek incumbent telecom operator (OTE SA): pricing of ADSL services, pricing of ATM services, definition of relevant markets and SMP.
  - Vodafone GR: allocation of backbone cost to data services using effective usage, a tool for ranking and selecting companies for procuring parts and services.
  - OPAP SA (Greek monopoly for lottery games and betting): economic and business models for the new VLT project (installation and operation of 16500 VLTs, sub-licencing of 18500 VLT licences).
  - National Academy of Sciences (2004-2008): Consultant to the Secretary General.
- E. Journal Reviewer (selected)**  
Mathematics of the Operations Research, Operations Research, JACM, Queuing Systems, Journal of Applied Probability, SIAM Journal of Algorithms, Distributed Computing, Acta Informatica, IEEE/ACM Transactions on Networking, IEEE JSAC, IEEE Transactions on Knowledge and Data Engineering, Stochastic Models, IEEE Transactions on Automatic Control, IEEE Transactions on Software Engineering, IEEE Transactions on Software Engineering, IEEE Transactions on Communications, IEEE Transactions on Information Theory, Telecommunication Systems, Bell Laboratories Technical Journal.
- F. Guest Editor**  
IEEE Journal on Selected Areas in Communications of the Special Issue "Price Based Access Control and Economics for Communication Networks".
- G. Member of Technical Program Committees (recent)**  
ACM SIGCOMM - ICN 2011, NETGCOOP 2011, IEEE ISCC 2011, GECON2010, ITC 22, FIA Valencia 2010, FIA Prague 2009, GamesNets09, Gecon 2009, AIMS 2009, BoD2008, Gecon 2008, ServiceWave 2008, AIMS 2008, PCI 2007, INFOCOM 2007, INFOCOM 2006, IFIP Networking 2006, EuroNGI Workshop on Self-Organization 2006, RAWNET 2006, EURO NGI conference on New Generation Internet Networks 2006, BoD 2006, INFOCOM 2005, IFIP Networking 2005, RAWNET 2005, AP2PC2005, EURO NGI conference on New Generation Internet Networks 2005, ICC05, IFIP Networking 2004, AP2PC2004, ANWIRE 2004, Second Workshop on Economics of Peer-to-Peer Systems, ICQT04, INFOCOM 2003, HET-NETs '03, ICQT2003, AP2PC AAMAS-2003.
- H. Invited talks (recent)**  
WITE 2012, UC Berkeley Sept. 2011, UC Santa Cruz Sept 2011, Caltech Aug. 2009, Netcoop 2009, Interperf 2008, WAC 2005, School on Algorithmic Aspects of Game Theory in Large Scale Networks (AAGTSLN 2004), The Onassis Foundations Science Lecture Series: The 2003 Lectures in Computer Science "Internet and Web: Crawling the Algorithmic Foundations".
- I. Keynote talks**  
ETM 2010, IT Innovations 2009, FIA Madrid 2008, IFIP Networking 2006, Advanced Internet Charging and QoS Technology Workshop (ICQT '04), IS&N 2000.
- J. Other (selected)**
- Member of evaluation panel for INRIA (2007).
  - Vice General Chair Valuetools 2008.
  - Member of EIFFEL think tank for the future Internet architecture.

## Other

- **Languages:** Fluent in English, French, German.
- **Sports:** tennis, serious swimming.
- **Hobbies:** classical piano (Piano Diploma, Philippos Nakas Conservatory, June 2011), cooking sous vide.

## Publications

Over 10.000 citations according to Publish or Perish (Google Scholar).

Most publications are in [www.nes.aueb.gr](http://www.nes.aueb.gr)

### A. Books

"Pricing Communication Networks: Economics, Technology and Modelling" Wiley, 2003, with R.R. Weber (Cambridge University).

"Computer Aided Verification 93", LNCS 697, Springer Verlag, Editor of Proceeding of CAV'93.

### B. Journal articles

(j1) "Invariance in Resource Sharing Problems", Journal of Applied Probability, 21, p. 777-785, 1984 (with J. Walrand and P. Varaiya).

(j2) "A Game-Theoretic View of two Processes Using a Single Resource", IEEE Transactions On Automatic Control, Vol. AC-28, No. 11, November 1983, p. 1059-1061 (with P. Varaiya).

(j3) "Servicing Processes with Least Thinking Time Maximizes Resource Utilization", IEEE Transactions on Automatic Control, Vol. AC-29, No. 11, November 1984, p. 1005-1008 (with P. Varaiya).

(j4) "Optimal Resolution of Conflict for two Processes", BLTJ, January 1981, part 1 (with P. Varaiya).

(j5) "Stability of a Queuing System with Concurrent Service and Locking", SIAM Journal on Computing, Vol. 16, No. 1, February 1987, p. 169-178 (with M. Reiman and B. Simon).

(j6) "The Optimal Control of a Queuing System with N Servers and Customers with Simultaneous Service Requirements", IEEE Transactions on Automatic Control AC-32(8), August 1987 (with M. Reiman).

(j7) "Necessary and Sufficient Conditions for Stability of a Bin Packing System", Journal of Applied Probability, 23, p. 989-999, 1986 (with R. Weber).

(j8) "Construction of the Stationary Regime of Queues with Locking", Stochastic Processes and their Applications 26 (1987), p. 257-265 (with F. Baccelli and M. Reiman).

(j9) "The Move-to-Front Rule for Multiple Lists", Probability in Engineering and Information Sciences, Vol. 4, p. 19-26, 1990 (with R. Weber).

(j10) "Stabilizing an Uncertain Production System", Queuing Systems: Theory and Applications, Vol. 5, p. 39-54, 1989, (with T. Konstantopoulos, J. Walrand and R. Weber).

(j11) "On Optimal Bin-Packing of Randomly Arriving Objects", in Mathematics of Operations Research, Vol. 16, No. 1, February 1991, (with U. Rothblum).

(j12) "Adding Liveness Properties to Coupled Finite-State Machines", ACM TOPLAS, April 1990 (with S. Aggarwal and P. Wolper).

(j13) "Stability of On-Line Bin-Packing with Random Arrivals and Long-Run-Average Constraints", in Probability in Engineering and Information Sciences, Vol. 4, p. 447-460, 1990 (with R. Weber).

(j14) "Weighted Round-Robin Packet Multiplexing in a General-Purpose ATM Switch Chip", IEEE Journal on Selected Areas in Communications, Vol. 9, No. 8, October 1991 (with M. Katevenis and S. Sidiropoulos).

(j15) "Memory-Efficient Algorithms for Automatic Verification", in Formal Methods in System Design (Kluwer), Vol. 1, p. 275-288, 1992 (with P. Wolper, M. Yannakakis and M. Vardi).

(j16) "Minimum and Maximum Delay Problems in Real - Time Systems", in Formal Methods in System Design (Kluwer), Vol. 1, p. 385-415, 1992 (with M. Yannakakis).

(j17) "Model Checking in Dense Real-Time", in Information and Computation, Vol. 104, No. 1, 1993 (with R. Alur and D. Dill).

(j18) "Stability of Flexible Manufacturing Systems", in Operations Research, Vol. 42, p. 947-957, 1994 (with R. Weber).

(j19) "The Algorithmic Analysis of Hybrid Systems", in Theoretical Computer Science, Vol. 157, January 1995 (with R. Alur, N. Halbwachs, T. Henzinger, P. Ho, X. Nicollin, A. Olivero, J. Sifakis and S. Yovine).

(j20) "Admission Control and Routing in ATM Networks using Inferences from Measured Buffer Occupancy", in IEEE Transactions in Communications, Vol. 43, p. 1778-1784, 1995 (with G. Kesidis, A. Ridder, J. Walrand and R. Weber).

(j21) "Effective Bandwidths for Stationary Sources", in Probability in Engineering and Information Sciences (PEIS), Vol. 9, 1995, p. 285-296 (with R. Weber).

- (j22) "The Complexity of Probabilistic Verification", JACM, Vol. 42, No. 4, July 1995, p. 857-907 (with M. Yannakakis).
- (j23) "Buffer Overflow Asymptotics for a Switch Handling Many Traffic Sources", Journal of Applied Probability, Vol. 33, 1996 (with R. Weber).
- (j24) "Computing Accumulated Delays in Real-Time Systems", Formal Methods in System Design, Vol.11, No. 2, p. 137—155, 1977 (with R. Alur and T. Henzinger).
- (j25) "Markov Decision Processes and Regular Events", IEEE Transaction on Automatic Control, Vol.43, No. 10, October 1998, p. 1399-1418 (with M. Yannakakis).
- (j26) "Application of the many sources asymptotic and effective bandwidths for traffic engineering", Telecommunication Systems, 12(2-3): 167--191, 1999 (with V. A. Siris and G. D. Stamoulis).
- (j27) "Measurement-based usage charging in communication networks", Operations Research, 48(4): 535-548, 2000 (with F. P. Kelly and R. Weber).
- (j28) "An Intelligent Agent for Optimizing QoS-for-Money in Priced ABR Connections", in Telecommunication Systems, Special Issue on Network Economics, 1998 (with G. D. Stamoulis, C. Manolakis and F. P. Kelly).
- (j29) "A study of simple usage-based charging schemes for broadband networks Telecommunication Systems, 15(3-4): 323-343, 2000 (with F. P. Kelly, V. A. Siris, and R. Weber).
- (j30) "Procedures and tools for analysis of network traffic measurements", International Journal of Performance Evaluation (with V.A. Siris).
- (j31) "Bin Packing with Discrete Item Sizes, Part I: Perfect Packing Theorems and the Average Case Behaviour of Optimal Packings", SIAM Journal on Discrete Mathematics, volume 13 (2000) (with D. Johnson, R. Weber, M. Yannakakis, E. Coffman, et al.).
- (j32) "Multiple Incentive Internet Pricing for NRNs: a Case Study", Telecommunications Policy, Vol. 24, No. 6-7, July-August 2000 (with T. Apostolopoulos, X. Psiakki and S. Kohen).
- (j33) "Procedures and tools for analysis of network traffic measurements", Performance Evaluation, Volume 48, Issues 1-4, May 2002, p. 5-23 (with V. A. Siris).
- (j34) "Traffic Equivalence and Substitution in a Multiplexer with Applications to Dynamic Call Admission Control", IEEE/ACM Transactions on Networking, April 2002, Vol. 10, No.2, p. 217-231 (with A. Dimakis, G.D. Stamoulis).
- (j35) "Simple Tariffs Based on Price Multipliers for ATM VBR Services", European Transactions on Telecommunications, 2002 (with V. Siris, G.D. Stamoulis).
- (j36) "Pricing Differentiated Services in the GPRS Environment", ACM Wireless Networks journal (WINET), WMI Special Issue, Vol. 9, No. 4, July 2003 (with S. Soursos and G.C. Polyzos).
- (j37) "Service differentiation and performance of weighted window-based congestion control and packet marking algorithms in ECN networks", Computer Communications. Volume 26, Issue 4, 1 March 2003, P. 314-326 (with V.A. Siris and George Margetis).
- (j38) "Auction-based Resource Reservation in 2.5/3G Networks", Kluwer/ACM Mobile Networks and Applications [MONET] special issue, accepted 2003, Vol. 10, No. 2, April 2005 (with M. Dramitinos and G. D. Stamoulis).
- (j39) "Comparing Economic Incentives in Peer-to-Peer Networks", Special Issue on Network Economics, Computer Networks, Elsevier, 45(1): 133-146, 2004 (with P. Antoniadis, and R. Mason).
- (j40) "Incentives for Content Availability in Memory-less Peer-to-Peer File Sharing Systems", ACM SIGecom Exchanges, 5(4): 11-20, July 2005 (with P. Antoniadis, and B. Strulo).
- (j41) "Incentives for large peer-to-peer systems", in IEEE JSAC Special Issue on Price-Based Access Control and Economics of Networking, 2006 (with R.R. Weber).
- (j42) "An Auction Mechanism for Allocating the Bandwidth of Networks to their Users", Elsevier IEEE Computer Networks, 51:18, p. 4979-4996, December 2007 (with M. Dramitinos and G. D. Stamoulis).
- (j43) "Dynamic Bandwidth Pricing: Provision Cost, Market Size, Effective Bandwidths and Price Games", Journal of Universal Computer Science, Vol. 14, No. 5 (2008), 766-785 (with S. Soursos and R.R. Weber).
- (j44) "Economic aspects of building software for service-oriented architectures", Concurrency and Computation: Practice and Experience, 2009 (with D. Antos and G. Stamoulis).
- (j45) "Economic Issues in Shared Infrastructures", IEEE/ACM Transactions on Networking, Vol. 20, issue 2, 2011 (with R.R. Weber).

### **C. Refereed Conference Proceedings**

- (c1) "Distributed Implementation of a Model of Communication and Computation", Proceedings of the International Conference on System Sciences, January 1985 (with S. Aggarwal).
- (c2) "Real Time Coordination of Concurrent Activities", Protocol Specification, Testing, and Verification, VI, B. Sarikaya and G. V. Bochmann (editors), Elsevier Sciences Publishers B. V. (North Holland), p. 387-400 (with S. Aggarwal and D. Barbara).
- (c3) "Implementing CCA on a Broadcast LAN", Protocol Specification, Testing, and Verification, VII, H. Rudin and C. West (editors), Elsevier Sciences Publishers B. V., North Holland (with S. Aggarwal and D. Barbara).
- (c4) "A Bin Packing System for Objects with Sizes from a Finite Set: Necessary and Sufficient Conditions for Stability and some Applications", Proceedings of 25 IEEE CDC Athens, Greece, December, 1986 (with R. Weber).
- (c5) "Reasoning About Fair Concurrent Programs", Proceedings of 18<sup>th</sup> STOC, Berkeley, 1986 (with P. Wolper and M. Vardi).
- (c6) "Verifying Temporal Properties of Finite-State Probabilistic Programs", Proceedings of 29<sup>th</sup> FOCS, 1988 (with M. Yannakakis).
- (c7) "Optimal Dynamic Allocation of Heterogeneous Servers under the Condition of Total Overload", Proceedings of 27 IEEE CDC, December 1988 (with M. Reiman).
- (c8) "Model-Checking for Real-Time Systems", in Proceedings of LICS 1990 (with R. Alur and D. Dill).
- (c9) "Markov Decision Processes and Regular Events", in Proceedings of ICALP 1990 (with M. Yannakakis).
- (c10) "Memory-Efficient Algorithms for Automatic Verification", in Proceedings of CAV 1990, LNCS, Springer Verlag (with P. Wolper, M. Yannakakis and M. Vardi).
- (c11) "Stable Policies for Petri-Nets with Fluctuating Transition Processes", in Proceedings of 29<sup>th</sup> IEEE CDC, 1990, (with R. Weber).
- (c12) "Model-Checking for Probabilistic Real-Time Systems", in Proceedings of ICALP 1991, LNCS, Springer Verlag (with R. Alur and D. Dill).
- (c13) "Continuous versus Uniform Distributions: A Bin-Packing Study", STOC 1991 (with E. Coffman, D. Johnson, et al.).
- (c14) "The Algebra of Boolean Processes", Proceedings of CAV 1991, LNCS, Springer Verlag (with S. Graf and S. Sifakis).
- (c15) "Minimum and Maximum Delay Problems in Real-Time Systems", in Proceedings of CAV 1991, LNCS, Springer Verlag (with M. Yannakakis).
- (c16) "Real-Time Issues in Call Acceptance Management for ATM Networks", Proceedings of 5th RACE TMN Conference, London, November 1991 (with G. Fouskas, V. Friesen, and S. Sartzetakis).
- (c17) "Minimization of Timed Transition Systems", in Proceedings of CONCUR 1992, LNCS, Springer Verlag, 1992 (with R. Alur, N. Halbwachs, D. Dill and H. Wong-Toi).
- (c18) "Verification with Real-Time COSPAN", in Proceedings of CAV 1992, LNCS, Springer Verlag, 1992 (with D. Dill, M. Chatzaki and P. Tzounakis).
- (c19) "An Implementation of Three Algorithms for Timing Verification Based on Automata Emptiness", in Proceedings of 1992 RTSS (with R. Alur, D. Dill, N. Halbwachs and H. Wong-Toi).
- (c20) "Hybrid Automata: An Algorithmic Approach to the Specification and Verification of Hybrid Systems", in the proceedings of the workshop on Hybrid Systems, LNCS, Springer Verlag, Lungby, Denmark, October 1992 (with R. Alur, T. Henzinger and P.H. Ho).
- (c21) "Verification of Timing Properties of VHDL", in Proceedings of CAV 1993, LNCS, Springer Verlag, 1993 (with W. Damm, B. Josko).
- (c22) "Computing Accumulated Delays in Real-Time Systems", in Proceedings of CAV 1993, LNCS, Springer Verlag, 1993 (with R. Alur and T. Henzinger).
- (c23) "On the Performance of an Effective Bandwidths Formula", in Proceedings of ITC94, North Holland (with G. Fouskas and R. Weber).
- (c24) "Decoupling Bandwidths for Networks: a Decomposition Approach to Resource Management", in Proceedings of GLOBECOM 94 (with G. de Veciana and J. Walrand).
- (c25) "The Observational Power of Clocks", in Proceedings of CONCUR' 94, LNCS, Springer Verlag, August 1994 (with R. Alur and T. Henzinger).
- (c26) "Distinguishing Tests for Nondeterministic and Probabilistic Machines", in Proceedings of STOC 95 (with R. Alur and M. Yannakakis).
- (c27) "An On-Line Estimation Procedure for Cell-Loss Probabilities in ATM Links", 3rd IFIP Workshop on Performance Modelling and Evaluation of ATM Networks, July 1995 (with G. Fouskas and R. Weber).

- (c28) "Extending Promela and SPIN for Real Time", in Proceedings of TACAS 96, LNCS, Springer Verlag, March 27-29, Passau, 1996 (with S. Tripakis).
- (c29) "Integration of Pricing and Flow Control for Available Bit Rate Services in ATM Networks", in Proceedings of GLOBCOM 96 (with V.A. Siris and G.D. Stamoulis).
- (c30) "An Experimental Environment for ABR pricing experiments", in Proceedings of ICT 97, Melbourne, April 1997 (with V.A. Siris, G.D. Stamoulis, R. Weber and F. Kelly).
- (c31) "Application of large deviation techniques for performance evaluation and dimensioning of ATM networks", in the proceedings of the ATM Traffic Symposium, Myconos, Greece, September 17-18, 1997 (with V. A. Siris and G. D. Stamoulis).
- (c32) "Many sources asymptotic and effective bandwidths: Investigation with MPEG traffic", 2nd IFIP Workshop on Traffic Management and Synthesis of ATM Networks, Montreal, Canada, September 24-26, 1997 (with V. A. Siris and G. D. Stamoulis).
- (c33) "Comparing usage-based pricing schemes for broadband networks", Colloquium on "Charging for ATM-the Reality Arrives", IEE, London, UK, November 20, 1997 (with V. A. Siris and G. D. Stamoulis).
- (c34) "An evaluation of pricing schemes that are based on effective usage", IEEE International Conference on Communications (ICC'98), Atlanta, USA, 1998 (with V. Siris).
- (c35) "A study of simple usage-based charging schemes for broadband networks", in Proceedings of IFIP TC6 Broadband Communications'98, Chapman Hall, Stuttgart, Germany, 1998 (with F. P. Kelly, V. A. Siris, and R. Weber).
- (c36) "An Intelligent Agent for Optimizing QoS-for-Money in Priced ABR Connections", in Proceedings of ICT98, Chalkidiki, Greece (with G. D. Stamoulis and C. Manolakis).
- (c37) "Application and evaluation of large deviation techniques for traffic engineering in broadband networks", ACM SIGMETRICS'98, Madison, Wisconsin, USA, 1998 (with V. A. Siris, and G. D. Stamoulis).
- (c38) "An Approach to Pricing and Resource Sharing for ABR Services", in Proceedings of GLOBCOM 98, Sydney, Australia, November 1998 (with V. Siris).
- (c39) "Network Control and Usage-based Charging: Is Charging for Volume Adequate?", in Proceedings of First International Conference on Information and Computational Economics (ICE'98), Charleston, SC, USA, October 1998 (with V. A. Siris and G. D. Stamoulis).
- (c40) "Agent-based negotiations for optimal selection of telecommunication services", in Proceedings of First Internet-Based Negotiation Technologies Workshop, March 18-19, 1999, (with G. Stamoulis, D. Kalopsikakis, A. Kirikoglou).
- (c41) "Managing and pricing service level agreements for differentiated services", in Proceedings of IWQoS'99 International Workshop on Quality of Service, UCL, London, May 31 - June 4, 1999 (with V. Siris).
- (c42) "Resource Allocation in Multiservice MPLS", Proceedings of IWQoS'99 International Workshop on Quality of Service, UCL, London, May 31 - June 4, 1999 (with M. Chatzaki, S. Sartzetakis, N. Papadakis).
- (c43) "Charging in a large loss system", Proceedings of ITC'99, June 7-10, 1999 (with M. Reiman).
- (c44) "Traffic equivalence and substitution in multiplexer", in Proceedings of IEEE INFOCOM 1999, New York, March 1999, (with G. Stamoulis, A. Dimakis).
- (C45) "A web-based tool for advanced statistical analysis of network traffic measurements", Proceedings of 8th IFIP Workshop on Performance Modelling and Analysis of ATM & IP Networks, Ilkley, West Yorkshire, UK, July 2000 (with V. Siris)
- (c46) "Efficient adaptation to dynamic pricing communicated by ECN marks: Scenarios for experimental assessment", Proceedings of SPIE International Symposium on Information Technologies 2000 (Program on Internet Performance and Control), Boston, USA, November 2000 (with P. Antoniadis, G. Margetis, V. A. Siris, and G. D. Stamoulis).
- (c47) "Providing bandwidth guarantees over a best-effort network: call-admission and pricing", In Proceedings of IEEE INFOCOM 2001 (with A. Dimakis and M.I. Reiman).
- (c48) "Information Asymmetry In the Internet Connectivity Market", in Proceedings of 4th Berlin Internet Economics Workshop, Berlin 2001 (with I. Konstantiou).
- (c49) "An auction mechanism for bandwidth allocation over paths", in Proceedings of ITC 2001 (with G. Stamoulis and M. Dramitinos).
- (c50) "Pricing Differentiated Services in the GPRS Environment", in Proceedings of The first ACM Wireless Mobile Internet Workshop Rome, Italy, July 16-21, 2001 (with S. Soursos and G.C. Polyzos).
- (c51) "Pricing for Efficient Quality of Service Support in Wireless Packet Networks", in Proceedings of 2nd Wireless World Research Forum Meeting, Helsinki, Finland, May 10 – 11, 2001 (with G.C. Polyzos).



- (c52) "Differentiated Services in the GPRS Wireless Access Environment", Proceedings of 2001 Tyrrhenian International Workshop on Digital Communications, Evolutionary Trends of the Internet, Taormina, Italy, September 17-20, 2001 (with S. Soursos and G.C. Polyzos).
- (c53) "Market Models for P2P Content Distribution", in Proceedings of AP2PC'02, Bologna, Italy, July 2002 (with P. Antoniadis).
- (c54) "Peer-to-Peer Wireless LAN Consortia: Economic Modelling and Architecture", in Proceedings of 3d IEEE International Conference on Peer-to-Peer Computing (P2P 2003), Linkoping, Sweden, 1-3 September 2003 (with P. Antoniadis, E. Efstathiou, G. Polyzos, B. Strulo).
- (c55) "The Case for Peer-to-Peer Wireless LAN Consortia", 12th IST Summit on Mobile and Wireless Communications, Aveiro, Portugal, June 15-18, 2003 (with P. Antoniadis, E. C. Efstathiou, G. C. Polyzos, B. Strulo).
- (c56) "Auction-based Resource Reservation in 2.5/3G Networks", In Proceedings of WiOpt'03: Modelling and Optimization in Mobile, Ad Hoc and Wireless Networks, INRIA, Sophia-Antipolis, France, March 3-5, 2003 (with M. Dramitinos, G. D. Stamoulis).
- (c57) "Asymptotics for Provisioning Problems of Peering Wireless LANs with a Large Number of Participants", in Proceedings of WiOpt' 04: Modelling and Optimization in Mobile, Ad Hoc and Wireless Networks, Cambridge (with R. Weber).
- (c58) "Resource Control for Loss-Sensitive Traffic in CDMA Networks", in Proceedings of 23rd IEEE INFOCOM, Hong Kong, March 7-11, 2004 (with V.A. Siris).
- (c59) "An Asymptotically Optimal Scheme for P2P File Sharing", in Proceedings of the Second Workshop on the Economics of Peer-to-Peer Systems, Harvard University, June 4-5 2004 (with P. Antoniadis, and R. Weber).
- (c60) "An Efficient Auction Mechanism for Hierarchically Structured Bandwidth Markets", In Proceedings of QoSIS 2004, ICQT Workshop, Barcelona, Spain, September 2004 (with M. Bitsaki and G. D. Stamoulis).
- (c61) "An Innovative Decision Support System for Bidding in Simultaneous Ascending Auctions", in Proceedings of 7<sup>th</sup> IEEE Conference on E-Commerce Technology (IEEE CEC 2005), Munich, Germany, July 19-22, 2005 (with M. Dramitinos and G. D. Stamoulis).
- (c62) "Auction-based Resource Reservation in 3G Networks Serving Multicast", in Proceedings of the 15th IST Mobile Summit, Mykonos, Greece, June 2006 (with M. Dramitinos, G. D. Stamoulis).
- (c63) "A Random Walk Model for Studying Allocation Patterns in Auction-based Resource Allocation", in Proceedings of the 5th International Workshop on Advanced Internet Charging and QoS Technologies (ICQT 2006), Springer LNCS 4033, p. 26-37, St Malo, France, June 27, 2006 (with M. Dramitinos, G. D. Stamoulis)
- (c64) "Pricing Resources on Demand", Proc. of the 1st IEEE International Workshop on Bandwidth on Demand, San Francisco, California, November 2006 (with S. Soursos and R. Weber).
- (c65) "GridEcon: A Market Place for Computing Resources", in Proceedings of 5th International Workshop on Grid Economics and Business Models, p. 185-196, Las Palmas, Spain, August 2008 (with J. Altman, G. D. Stamoulis, M. Dramitinos, T. Rayna, M. Risch and C. Bannick).
- (c66) "Market Mechanisms for Trading Grid Resources", in Proceedings of 5th International Workshop on Grid Economics and Business Models, p. 58-72, Las Palmas, Spain, August, 2008 (with M. Dramitinos, T. Rayna, S. Soursos and G. D. Stamoulis).
- (c67) "Tariffs, Mechanisms and Equilibria at a Single Internet Link", in Proceedings of NETCOOP 2009 (with A. Dimakis).
- (c68) "Congestion Control and Pricing of Volume Intensive Applications", in Proceedings of ITC 21, Paris, September 2009 (with A. Dimakis).
- (c69) "Grid Economics and Business Models", in Proceedings of 6th International Workshop on Grid Economics and Business Models, Delft, The Netherlands, August 2009 (with R. Mason and N. Miliou).
- (c70) "Economic Issues in Shared Infrastructures", in Proceedings of the 1st ACM SIGCOMM Workshop on Virtualized Infrastructure Systems and Architectures, Barcelona, Spain, August 2009 (with R. Weber).
- (c71) "Optimal Call Routing in VoIP", in Proceedings of ITC 21, Paris, September 2009 (with C. Kalogiros and R. Weber).
- (c72) "WOICE: a Decentralized System for Ubiquitous VoIP Services", in Proceedings of DIGIBIZ 2009, London, June 2009 (with C. Kalogiros and P. Antoniadis).
- (c73) "Fair Background Data Transfers of Minimal Delay Impact", in Proceedings of IEEE INFOCOM, Orlando, Florida, March 2012 (with A. Dimakis).

#### **D. Invited Publications**

- (i1) "Verifying Automata Specifications of Probabilistic Real-Time Systems", in Proceedings of REX Workshop "Real-Time: Theory in Practice", LNCS 600, J.W. de Bakker, C. Huizing, W.P. de Roever, G. Rozenberg, editors, Springer-Verlag, Berlin, 1991 (with R. Alur and D. Dill)
- (i2) "Distributed Reachability Analysis for Protocol Verification environments", Discrete Event Systems: Models and Applications, P. Varaiya and A. B. Kurzhanski (Eds), Lecture Notes in Control and Information Sciences 103, Springer Verlag (with S. Aggarwal and R. Alonso)
- (i3) "Stable Policies for Petri-Nets with Fluctuating Transition Processes", in Proceedings of 29<sup>th</sup> IEEE CDC, 1990, (with R. Weber).
- (i4) "A Preliminary Model for Distributed Algorithms", 2nd IFAC Symposium on Large Scale Systems: Theory and Applications, Toulouse, France, June 24-26, 1980 (with P. Varaiya).
- (i5) "WIENER and NIKESH: the comparison of two QoS Network Management Experiments", in δεύτερο ATM Workshop, Dublin, 1990 (with G. Fouskas, S. Leventis, S. Sartzetakis and A. Lazar).
- (i6) "Using Asymptotic Techniques in Call Acceptance Management for ATM Networks", Proceedings of ERCIM Workshop on Network Management, Heraklion, 1992 (with G. Fouskas)
- (i7) "Networking in FORTH", Proceedings of ERCIM Workshop on Network Management, Heraklion, 1992 (with Y. Fragiadakis, S. Sartzetakis, V. Spitadakis, C. Strakadounas and P. Tzortzakis)
- (i8) "Experimental Evaluation of the Use of Large Deviation Asymptotics for the QoS Management of ATM Networks", 5th International Conference on Advances in Communication and Control, June 1995 (with G. Fouskas and R. Weber)
- (i9) "Estimation of Overflow Probabilities for State-Dependent Service of Traffic Streams with dedicated Buffers", Proceedings of Stochastic Networks Workshop, Edinburgh, August 1-12, 1995 (with R. Weber)
- (i10) "Charging Issues for Services in Broadband Networks", in Proceedings of the Organization for Economic Coordination and Development (OECD) Conference on The Economics of the Information Society, Istanbul, December 1995 (with V.A. Siris, G.D. Stamoulis and Y. Markopoulos).
- (i11) "Comparing usage-based pricing schemes for broadband networks", 1997 joint international meeting between EURO and INFORMS, Barcelona, Spain, July 14-17, 1997 (with V. A. Siris and G. D. Stamoulis)
- (i12) "Probabilistic model checking: formalisms and algorithms for discrete-time and real-time systems", Proceedings of the NATO school on Program Verification, LNCS, Springer Verlag, Antalya, June 1997 (with S. Tripakis)
- (i13) "Games Between Competing ISPs Employing Different Pricing Schemes", in Proceedings of Euro-NF International Workshop on Traffic and Congestion Control for the Future Internet, Volos, March 2011 (with A. Kostopoulos, A. Dimakis).

#### **E. Technical Reports**

- (m1) "The Laplace Transform of the Distribution of the Busy Period and The Stability Condition of a Multi-class Queue with Service Dependent Arrival Rates", AT&T Bell Laboratories Technical Memo (with J. Reeds and L. Shepp)
- (m2) "The Formal Specification of The Session Layer in the BX.25 Protocol", AT&T Bell Laboratories Technical Memo (with B. Gopinath and R. Kurshan)
- (m3) "A Note on Effective Bandwidth", Institute of Computer Science, FORTH TR-036, 1992 (with J. Walrand)