CURRICULUM VITAE

Prof. P. Takis Mathiopoulos
Research Director

Institute for Space Applications and Remote Sensing (ISARS)
National Observatory of Athens (NOA)
P. Penteli 152 36, Athens, Greece

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BIOGRAPHY

P. Takis Mathiopoulos received the Diploma in Electrical Engineering from the University of Patras, Greece, in 1979, the Master of Engineering (M.Eng.) degree with a specialization in Microwaves and the Ph.D. degree from the University of Ottawa with a specialization in Digital Telecommunications, in 1989, both in Canada.

He is currently Director of Research of the Institute for Space Applications and Remote Sensing (ISARS) at the National Observatory of Athens, in Penteli, Athens, Greece. NOA is a publicly funded R&D organization and is the oldest research institution of modern Greece established in 1854. From 2000-2005 he was the Director of the Institute. In this capacity, Prof. Mathiopoulos was responsible for the daily operation of the Institute as well as its scientific management. ISARS has more then 15 permanent research, technical and support staff, and numerous graduate students and post-doctoral fellows. Its main objective is to carry out R&D projects in these fields, which include Remote Sensing, Telecommunications, the Magnetosphere and the Ionosphere. The Institute is well equipped with state-of-the-art satellite and ionospheric ground stations, as well as various RF and electronic test and measurement equipment and computing facilities.

As ISARS' Director, he has made notable contributions to the scientific advancement and significant expansion of the Institute, including the following:

1. Designed, organized and implemented a five-year strategic plan for improving ISARS' scientific, administrative and external funding track record. The success of such plan and his efforts towards this goal is validated by the following:
    i) 3-fold increase in the number of personnel;
    ii) 2-fold increase of the external research funding;
    iii) 3-fold increase in the number of PhD students;
    iv) 2-fold increase in the number of international archival journal publications.

2. Successfully hiring of:
    i) 8 new Researchers (tenure-track positions) with complementary expertise in the areas such as signal processing, wireless networks, pattern recognition, optics for space applications and remote sensing;
    ii) Supporting the promotion and tenure of 7 researchers.

3. The foundation in 2000 of, and since then, the supervision of a new group with R&D activities in the field of "Wireless Communications", with emphasis on research dealing with physical layer problems. Within five years this group has been recognized as a leading research group not only in Greece but also in the European and international telecommunication research community. The group has established contacts with and has been collaborating through national, European and international RD projects, with academic institutions, industrial and governmental organization, and some industry. Collaborations include institutions from Germany (e.g. DLR), UK, (e.g. University of Surrey), Italy (e.g. University of Bologna), France (e.g. TESA), Canada (e.g. UBC and University of Ottawa), China (e.g. Southwest Jiaotong University and BUPT), and Japan (Keio University). As it can be seen from his publication list the group has a very significant track record in terms of IEEE journal publication and participation in many national and European R&D projects. It is noted that 40 of these journal papers have been published or accepted for publication the last 5 years. Today, the group he is supervising consists of 5 Ph.D. students, 2 post-doctoral fellows and 1 research engineer.

4. Participation as Prime Investigator (PI) for ISARS in 14 funded R&D projects (4 funded by the European Commission, 6 National, 2 with the European Space Agency (ESA), and 2 with private companies) with a total funding for the National Observatory of Athens of close to 1.5 M€. It should be noted that for 6 of the above projects, ISARS was the prime contractor and he was directing these projects. Additionally, he has participated in 6 additional projects (2 Europeans and 4 Nationals) and for the one of the European projects (METAMORP) he was its Technical Manager.

5. Establishing formal collaboration links with the Remote Sensing and Space Physics group which has resulted in the successful common participations in R&D projects.

As a researcher, Prof.. Mathiopoulos is an internationally recognized authority with a proven track record for original research contributions and in the field of digital wireless telecommunications for terrestrial and satellite systems specializing on the physical layer of such systems.

In the early 80's he has accumulated 4 years of industrial (hands-on and managerial) experience at Raytheon Canada Ltd., where he was working in the areas of air-navigational and satellite communications. In 1989 he joined the Department of Electrical and Computer Engineering (ECE) of the University of British Columbia (UBC)[1] as an Assistant Professor where he was a faculty member for 14 years and from 2000 - 2003 he was holding the rank of Full Professor. He continued his affiliation with UBC as an Adjunct Professor until 2008. Since 2003 he also teaches part-time at the Department of Informatics and Telecommunications, University of Athens. He has supervised the thesis of 23 graduate students (7 Ph.D. and 16 M.A.Sc.) four of whom hold faculty positions in Canada, USA and Greece.

Over the years, Prof. Mathiopoulos has supervised university and industry based R&D groups and has successfully acted as technical manager for large R&D Canadian and European projects. His early work in the 80's in the field of digital telecommunications dealt with point-to-point and point-to-multi-point high capacity terrestrial and satellite digital communication systems. Since 1990, his research activities have shifted towards mobile and personal digital communications with current emphasis on multimedia applications. His scientific contributions in the general field of digital wireless communications cover a wide area of research topics dealing with mainly their physical and access layers. Specific research activities include digital communications over fading and interference environments, channel characterization and measurements, modulation and coding techniques, SIMO/MIMO, UWB, OFDM, and software/cognitive radios. In these areas, he has authored or co-authored 80 archival journal papers published mainly in various *IEEE Transactions*, for which he has received more than 550 citations, and 114 papers published in international conference proceedings.

Prof. Mathiopoulos has acted numerous times as a consultant for many industrial organizations and various governmental agencies all over the world. Since 1993, he has served on a regular basis as a scientific advisor and technical expert for the European Commission (EC) for the ACTS and IST programs. In this capacity, he has been appointed by the EC in numerous high level advisory, evaluation and auditing panels in the technical areas of telecommunications,

[1] UBC is one of the leading academic institutions in the world. In all recent yearly well respected academic evaluations of all Universities in the world, conducted by the Institute of Higher Education, Shanghai Jiao Tong University, UBC was always ranked among the first 40. It's also considered as the second best University in Canada and one of its Professors has been a Nobel Laureate.

information technology and electronic commerce and publishing. In 2000 he has been appointed as national representative of the Hellenic Republic on the Space Advisory Group (SAG) of the European Commission. He also serves as a national representative in the COST Actions 271 and 273. From 1993 - 2006, Prof. Mathiopoulos has been the Editor for Wireless Personal Communications of the *IEEE Transactions on Communications*. He also serves or had served in the past on the Editorial Board of several other scientific journals including the *IET – Communications* (formally *IEE Proceedings – Communications*) *IEEE Communication Magazine*, *IEEE Personal Communications* and the *International Journal of Wireless Personal Communications*, and the *Journal of Communications and Networking*, Microsoft's ENCARTA Encyclopedia, and the new electronic scientific Encyclopedia Scholarpedia (www.scholarpedia.org). While on faculty at UBC he was awarded the ASI and Killam Fellowships. He has been a member of the Technical Program Committees of numerous international telecommunication conferences and has delivered numerous invited presentations, including plenary lectures, and has taught many short courses all over the world. He has served as a member of the TPC of more than 50 international (mainly IEEE) conferences for some of which he has acted as Vice-Chair. He has delivered numerous plenary lectures and has taught regular and short-courses all over the world.

In September 2005, one of his publications[2] has been acknowledged from the Editors of the *IEEE Journal on Selected Areas in Communications (Special Issue on Differential and Noncoherent Wireless Communications)* as one of the four most influential papers (out of the 1000+) published on this subject of the last four decades. In their editorial comment his paper is referred to as "real breakthrough" and as a "seminal paper". It should be noted that for the first time in 1989[3], Profs. Makrakis and Mathiopoulos have proposed the term "Multiple Differential Detection" for the optimal receiver in fading channels. This term has now been recognized as the most generic term for maximum likelihood block-by-block detection in fading channels.

More recently, another paper[4] has been selected for the best paper award from the papers published in 3rd International Conference on Communications, Control and Signal Processing, which was held in Malta in March 2008.

In June 2006, he was elected to the 16 member Steering Board of the Integral Satellite Initiative (ISI). The ISI is an industry-led action forum designed to bring together all aspects related to satellite communications. ISI addresses broadcasting, broadband, and mobile satellite communications, as well as their convergence, in integration within the global telecommunication network infrastructure. ISI supports all forms of space communication and space exploitation. ISI

[2] D. Makrakis, P. T. Mathiopoulos and D. P. Bouras, "Optimal decoding of coded PSK and QAM signals in correlated fast fading channels: A combined envelope, multiple differential and coherent detection approach," *IEEE Transactions on Communications.*, vol. COM-42, pp. 63-75, Jan. 1994

[3] D. Makrakis and P. T. Mathiopoulos, "Optimal decoding in fading channels: A combined envelope, multiple differential and coherent detection approach," in the Proceedings of *IEEE GLOBECOM 89*, pp. 1551-1557, 1989.

[4] Z. Papadimitriou, P. T. Mathiopoulos, N. C. Sagias and L. Merakos, "On the Weibull distribution with arbitrary correlation," *ICCSP2008,* March 2008.

is one of the five Technology Platforms included in the seventh Framework Programme (FP7) of the European Commission. ISI has a worldwide membership of 174 organizations from 27 different countries.

In December 2008, the President of Southwest Jiaotong University, Chengdu, China, has appointed him for a period of five years a Guest Professor at the Key Laboratory of Information, Coding and Transmission of the Institute of Mobile Communications.

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I GENERAL INFORMATION

I.1 PERSONAL DATA

NAME: P. Takis Mathiopoulos

DATE OF BIRTH: 26 November 1956

PLACE OF BIRTH: Athens

NATIONALITY: Greek and Canadian

OFFICE ADDRESS: Institute for Space Applications and Remote Sensing
National Observatory of Athens
I. Metaxa and Vas. Pavlou
P. Penteli, 152 36 Athens, Greece
Tel: +30 210 8109181 / Fax: +30 210 6138343
e-mail: mathio@space.noa.gr

I.2 AREAS OF EXPERTISE

- Digital Communication Systems (Terrestrial and Satellite)

I.3 EDUCATION

1989 ***Doctorate in Philosophy (Ph. D.)***
Electrical Engineering Department, University of Ottawa, Canada
Specialization: *Digital Communications*:
Thesis Title: *"On Bandwidth Efficient QAM Transmission Systems"*

1982 ***Master of Engineering (M. Eng.)***
Electronic Department, University of Carleton, Canada
Specialization: *Microwaves*:
Thesis Title: *"Experimental Performance and Design of a Microwave GaAs MESFET Class AB Power Amplifier"*

1979 ***Diploma***
Electrical Engineering, University of Patras, Greece

1974 ***Greek Apolitirio***, German High School of Athens, Greece

1974 ***Deutsches Abitur***, German High School of Athens, Greece

I.4 EMPLOYMENT

2008-	*Guest Professor*, Southwest Jiatong University, Chengdu, China
2005 -	*Research Director* Institute for Space Applications and Remote Sensing National Observatory of Athens, Greece
2003 -	*Professor (part-time),* Department of Informatics and Telecommunications, University of Athens, Greece
2003 -2007	*Adjunct Professor,* Department of Electrical and Computer Engineering, the University of British Columbia (UBC), Vancouver, Canada
2000 - 2005	*Director* Institute for Space Applications and Remote Sensing National Observatory of Athens, Greece
2000 - 2003	*Professor,* Department of Electrical and Computer Engineering, The University of British Columbia, Vancouver, Canada
1994 - 1999	*Associate Professor,* Department of Electrical and Computer Engineering, The University of British Columbia, Vancouver, Canada
1996 - 1997	*Visiting Associate Professor,* Department of Electrical Engineering and Computer Technology, University of Patras, Greece
1989 - 1994	*Assistant Professor,* Department of Electrical and Computer Engineering, The University of British Columbia, Vancouver, Canada
1987 - 1988	*Lecturer,* Department of Electrical Engineering, University of Ottawa, Canada
1985 - 1988	*Digital Communications Laboratory,* Department of Electrical Engineering, University of Ottawa, Research Engineer employed with the functioning of the laboratory's satellite station.
1981 - 1983	*Raytheon Canada Ltd., Canada,* Design and development engineer for circuits and several subsystems for two air-navigation systems [Distance Measuring Equipment (DME) and Doppler VHF Omnirange (DVOR)].

I.5 CONSULTING POSITIONS

1999-	*European Commission,* Evaluator and Auditor, Information Society Technology (IST) Program,
1998-	*Advanced Interactive Inc.,* Consultant in Multimedia Systems,
1997 -1999	*Tecommunication Institute of Thailand,* Consultant and Invited Lecturer in Mobile and Personal Telecom Systems,
1997 - 1999	*Swan Technologies Inc,* Consultant in Cellular Telecommunication Systems,
1997 - 2001	*Ericsson,* Consultant in Future PCS/UMTS Telecom Systems,
1993-1997	*European Commission,* Evaluator, Auditor and Visionary Researcher, Advanced Communication Technology and Services (ACTS) Program,

1997	*Kluwer Academic Publishers,* Consultant for Publishing Telecommunication books,
1995	*Canadian Aeronautics Ltd.,* Canada, Consultant in Mobile/Personal Telecommunications via Satellite,
1994 - 1995	*Microsoft, USA*, Consultant in Telecommunications, ENCARTA Encyclopedia,
1993	*Microtel Pacific Research Ltd.,* Canada, Consultant in Mobile/Personal Telecommunications via Satellite,
1992 - 1993	*RACE Technologies Inc,* Canada, Consultant in Ionospheric Telecom Systems,
1989	*Mobile Data Incorporation,* Canada, Consultant in Mobile Cellular Telecom Systems,
1989	*CANTEL Inc., Canada*, Consultant in Digital Cellular Telecom Systems,
1983 - 1987	*Raytheon Canada Ltd.,* Canada, Consultant in Air-Navigational and Radar Systems.

I.6 ACADEMIC AWARDS AND RECOGNITIONS

- Fellow, Advanced Systems Institute, Canada
- Killam Research Fellow, Canada
- Senior Member, IEEE, USA
- Member of Editorial Board in 8 international scientific journals
- Member of the Technical Program Committees in more than 50 international conferences and Session Chairman for most of them
- Vice-Chair of the Technical Program Committee of the most important IEEE conference in mobile communications (IEEE VTC-2006, Melbourne, Australia and VTC-2008F, Calgary, Canada)
- Plenary Speaker in 5 international conferences and scientific meetings
- Evaluator, Auditor and Panel Rapporteur in 14 Calls for Proposals for the European Commission RTD Programmes ACTS and ICT, with an estimated budget from each call in the order of 30-60 M€.
- Visionary Researcher and Advisor for the European Commission for the framework 1998-2002
- Reviewer for 8 international Journals and 7 funding organizations
- Teaching of 6 short courses in Thailand, China and Korea
- Recognition of one of his papers by the Editorial Board of the *IEEE Journal on Selected Areas in Communications*, as one of the four most important and seminal journal papers published during the last decades in the field of "Differential and Noncoherent Wireless Communications". More specifically the Editors of the special issue refer to this paper as "... *a real breakthrough*…" and *"... seminal contribution ..."*

- Ph.D. External Examiner - The National University of Singapore, Technical University of Vienna, University of Bologna
- Member of the Steering Board, European Technological Platform for SatCom: Integral Satellite Initiative (ISI) Platform
- Best paper award for ICCSPC2008.
- Guest Professorship (2008 – 2013), Southwest Jiaotong University, Chengdu, China

I.7 PLENARY LECTURES

- IEEE Asia Pacific Conference on Circuits and Systems, Seoul, Korea, Nov. 1996
- The 1st SMi Annual Software Radio Conference, London, UK, April 2001
- The 1st Conference on Telecommunications of the ECONOMIST, Athens, May 2001
- The 2nd SMi Annual Software Radio Conference, London, UK, June 2002
- The 2nd International Workshop on Wireless Communication and Networking, Jinan, China, Dec. 2003
- The 3rd Future Telecommunication Workshop, Sanya, Hainan, China, 2004
- Advanced Satellite Mobile Systems (ASMS) Conference 2006, Herrsching, Germany, June 2006
- Virtual Immersive Communication (VICOM) Conference, Piza, Italy, May 2006

I.8 EDITORIAL BOARDS

2008 -	Member of the Editorial Board – *IET Communications*
2008 -	Member of the Editorial Board (Telecommunications) – *Scholarpedia (www.scholarpedia.org)*
1993 - 2006	Editor for Wireless Personal Communications - *IEEE Transactions on Communications*
1994 - 1996	Editor - *IEEE Personal Communications Magazine*
1994 -	Editor - *International Journal of Wireless Personal Communications*. [This magazine is published by Kluwer Academic Publishers]
2000 -	The first International Editor for Satellite Communications - *Journal of Communications and Networks* [This magazine is published by the Korea Institute of Communication Services and is technically cosponsored by the IEEE Communication Society and the IEICE Communications of Japan]
2000	Guest Editor – *IEEE Communications Magazine,* Issue on Satellite Based Internet Technology and Services
2000	Guest Editor – *IEEE Personal Communications Magazine,* Issue on the Evolution of Mobile Data Networking

1999 Guest Editor - *Journal on Special Topics in Mobile Networking and Applications (MONET),* Issue on Mobile Data Network: Advanced Technologies and Services
[This magazine is published by Baltzer Science Publishers and is technically cosponsored by ACM]

1995 - 1996 Editor of Telecommunications, Encarta Encyclopedia, Microsoft

I.9 TEACHING EXPERIENCE

I.9.1 University of Ottawa

In 1987 and 1988, he has taught as a Lecturer, the course of the third academic year ELG-3170 *Introduction to Communication Systems.*

Moreover, he designed and implemented 4 laboratory experiments and was responsible for their operations within the framework of ELG-4171 course - *Communication Engineering* (1987). These experiments were:

i) Phase Locked Loops
ii) Probability and correlation measurements
iii) Several pulse modulations
iv) Noise characteristics measurements

I.9.2 The University of British Columbia

A. Post Graduate Course

1. EECE-563 *Wireless Personal Telecommunication Systems*
   [Note: New course which he has proposed in 1991 to be included in the department graduate program and was taught for the first time in 1992 at UBC]

B. Undergraduate Courses

1. EECE-361 *Communication Laboratory*
   [Note: New course designed and taught for the first time by him in 1998. This course includes 4 experimental regarding telecommunication systems, and has already been included at the Program of Studies.]
2. EECE-457 *Radio Frequency (RF) Electronics*
   [Note: New course which he has proposed in 1991 to be included in the department graduate program and was taught for the first time in 1992 in UBC]
3. EECE-453 Communication *Systems*
4. EECE-359 *Signals and Communications*
5. EECE-253 *Circuit Analysis II*
6. EECE-253 *Circuit Analysis I*

I.9.3 University of Athens

Post Graduate Course

1. Satellite Communications
   (Note: New course which he is teaching at the post graduate program «Management and Financial of the Telecommunication Networks» of the University of Athens)

2. Alternative Telecommunication Networks

I.9.4 Short Courses

1. Advanced Wireless Communication Systems and Networks, Shandung University, Jinan, China, December 2005
2. Satellite Networks and Systems, National Commission of Telecommunication and Posts, Athens, April 2004
3. Wireless Telecommunication Systems – Course within the framework of the Program Human Networks (Advanced Systems Vehicle Remote Sensing – ASVRS), Athens, January 2004 and July 2005
4. Wireless Telecommunication Systems: Standards and Technologies, Agency for Defense Development, Republic of Korea, December 2002
5. Software Radio Systems, Northern Jiantong University, Beijing, China, November 2002
6. Wireless Personal Telecommunication Systems, Sirindhorn International Institute of Technology, Thammasat University, Thailand, October 2000

I.10 GRADUATED STUDENTS SUPERVISION

Since 1989, the following students have been graduated with a Master of Applied Science (M.A.Sc) degree under his supervision:

1. N. Chan (M.A.Sc.) He graduated in 1999 and since then he works for Motorola in USA.
2. J. S. Toor (M.A.Sc.) He graduated in 1995 and since then he works for BNR Canada.
3. C. A. Willams (M.A.Sc.) He graduated in 1994 and since then he works for BNR Canada.
4. I. A. Marsland (M.A.Sc) He graduated in 1994.
5. S. S. Shin (M.A.Sc.) He graduated in 1992 and since then he works for MPR Teltech, Canada.

6. D. P.-C. Wong (M.A.Sc.) He graduated in 1991 and since then he works for Toshiba, Japan.
7. A.-M. Silvester (M.A.Sc.) Graduated in 2004 and since then continues his studies towards Ph.D.
8. Z. Xu (M.A.Sc.) Graduated in 2001 and since then works for Toshiba, CandaD. Chiu (M.A.Sc.) Graduated in 2002 and since then works as a free-lancer in Canada.
9. T. Chaiyakul (M.A.Sc.) Graduated in 2003 and since then works as a free-lancer in Thailand.
10. M. Li (M.Eng.) Graduated in 2002 and since then works as a free lancer in China.
11. T. Cheung (M.A.Sc.) Graduated in 2001 and since then works as a free lancer in Canada.
12. Z. Yi (M.A.Sc.) Graduated in 2001 and since 1996 works in NORTEL, Canada.
13. L. Chan (M.A.Sc.) Graduated in 2001 and since then works for AT&T, USA.
14. D. Chiu (M.A.Sc.) Graduated in 2001 and since then works for Sierra Wireless, Canada.
15. J. Zhang (M.A.Sc.) Graduated in 2001 and since then works for HP, USA.

Since 1989, the following students have been graduated with a Ph.D., degree under his supervision:

1. P. S. Bithas (Ph.D.), Thesis Title: *Wireless Digital Communication Systems in the Presence of Generalized Fading Channels*, Graduated in 2008 and currently works as a Postdoctoral Fellow at ISARS.
2. Z. Wang (Ph.D), Thesis Title *Channel Resource Management Strategies for Low Earth Orbit Mobile Satellite Systems* Graduated in 2006 and currently works as a postdoctoral fellow at the University of Ottawa.
3. N. Sagias (Ph.D.), Thesis Title: *Correlated Weibull Fading Channels and Associated Receiver Structures*, He received the Best Thesis Ericsson Hellas Award, Graduated in 2005 and since 2008 he works as an Assistant Professor at the University of Peloponnese, Tripoli, Greece
4. H. Nie (Ph.D.) Thesis Title: *Interference Cancellation and Macrodiversity for Wideband CDMA Systems Employing Software Radio Base Station* Graduated in 2003 and now he works as an assistant professor at the University of Iowa, Department of Electrical and Computer Engineering.
5. C.-D. Iskander (Ph.D.), Thesis Title: *Variable Bit Rate Video Transmission for CDMA Systems in Wideband Fading Channels*, His thesis was selected the best thesis in ECE and was nominated for the best Thesis Award in Canada, Graduated in 2003 and since then works as an assistant professor at the Florida Atlantic University, USA.
6. I. D. Marsland (Ph.D.), Thesis Title: *Iterative Noncoherent Detection of Differentially Encoded M-PSK* Graduated in 1999 and since 1999 works as an assistant professor at the Carleton University, Canada.

7. D. P. Bouras (Ph.D.) Thesis Title: *Advanced Noncoherent Receivers for Mobile Fading Channels* He graduated in 1995 and since then he works for ATMEL Hellas.

Currently he is supervising 5 Ph.D. students (Kokkalis, Dalakas, Papadimitriou, Benmayor, and Doukeli).

Since 1989 he had supervised the final year thesis project of more than 50 undergraduate students.

II PROFESSIONAL EXPERIENCE

II.1 ISARS-NOA

II.1.1 Summary of Main Achievements (2000-2005)

In the Institute for Space Applications and Remote Sensing (ISARS) there are currently four research groups: Space Physics, Ionosphere, Remote Sensing and Wireless Communications. As ISARS' Director from 2000-2005, he has have made the following main contributions to its advancement and significant expansion witnessed during the last five years.

1. Designed, organized and implemented a five-year strategy for improving ISARS' scientific, administrative and external funding track record. The success of such plan and his efforts towards this goal is validated by the following facts:

    i) 3-fold increase of the number of personnel;
    ii) 2-fold increase of the external research funding;
    iii) 3-fold increase of the number of PhD students;
    iv) 2-fold increase of the number of archival journal publications.

2. Successfully hiring of:

    i) 8 new Researchers (tenure-track positions) with complementary expertise in the areas such as signal processing, wireless networks, pattern recognition, optics for space applications and remote sensing;
    ii) Supporting the promotion and tenure of 7 researchers.

3. The foundation in 2000 of, and since then, the supervision of a new group with R&D activities in the field of "Wireless Communications". Within five years this group has been recognized as a leading research group not only in Greece but also in the European and international telecommunication research community. The group has established contacts with, and is currently collaborating, with academic institutions, industrial and governmental organizations, as well as industry from all over the world. As it is evident from his publication list (see Section IV), the group has a strong track record in terms of IEEE journal publications and participation in many national and European R&D projects. Currently the group he is supervising consists of 5 Ph.D. students, 2 post-doctoral fellows and 1 research engineer.
4. Participation as Prime Investigator (PI) for ISARS in 11 funded R&D projects (3 funded by the European Commission, 5 National, 1 with ESA, and 1 with a private company) with a total funding for the National Observatory of Athens of 1,121,090 Euros. It should be noted that for 6 of the above projects, ISARS was the prime contractor and he was directing these projects. Additionally, he has participated in 6 additional projects (2 Europeans and 4 Nationals) and for the

of the European projects (METAMORP) he has had the honor to act as the Technical Manager. Details about all these projects are listed in Section II.1.3, Tables I and III.

5. Establishing formal collaboration activities with the Remote Sensing and Space Physics group the outcome of which resulted in successful applications of R&D projects (see Section II.1.3, Table II).

II.1.2 Research Directions and Achievements

His early work in the 80's in the field of wireless telecommunications dealt with point-to-point and point-to-multi-point high capacity terrestrial and satellite digital communication systems. Since 1990, his research activities have shifted towards mobile and personal communications with current emphasis on multimedia applications. His scientific contributions in the field of wireless telecommunications cover a wide area of research topics mainly dealing with their physical and access layers. Original research contributions include work in the areas of optimal communications over fading channels, channel characterization and measurements, advanced coding techniques, including turbo-codes, diversity and synchronization, HDTV, neural networks, smart antennas, UMTS and S-UMTS, software radios, MAC layer protocols and MIMOs. In these areas, he has authored and/or co-authored more than 50 archival journal papers published in various *IEEE Transactions*, as well as close to 100 papers published in various international conference proceedings. For the last five years, he has published 25 IEEE Transactions and about 50 conference papers.

In general terms our many research achievements can be presented in the following research directions:

1. Transceiver Structures
2. Diversity-MIMO Techniques
3. Coding and Decoding Techniques
4. CDMA andOFDM Systems
5. Ultra Wideband (UWB) Systems
6. Software Radios
7. Mobile Channel Measurements and Modeling
8. Performance Studies in Interference Environments
9. Resource Management and Allocation Studies for LEO-MSS
10. Cross Layer Optimization

II.1.3 Funded Programs (1999 -

TABLE I: Funded Programs – Mathiopoulos (Principal Investigator)				
PROGRAM	**DURATION**	**FUNDING FOR NOA (€)**	**FUNDING AGENCY**	**PARTICIPATION ISARS-NOA**
1) OFDM Digital Transmission Techniques for Broadband Satellites	1/12/2007-31/6/2009	80,000.00	European Space Agency	Partner
2) Wireless OFDM Systems	1/11/2005-31/10/2008	36,000.00	BES SA	Coordinator
3) Ultra Wideband Communication Systems	1/6/2006-31/3/2008	60,000.00	GSRT –Bilateral Cooperation (Canada-Greece)	Coordinator
4) Satellite Network of Excellence II (SatNEx-II)	1/1/2006-31/12/2008	434,000.00	European Commission-IST Program	Partner
5) Network Sensors: Algorithm Development, Protocol Design and Performance Evaluation	2005-2008	60,000.00	GSRT - PENED-03	Coordinator
6) Development and Study of MIMO Systems	2005-2008	49,700.00	GSRT - PENED-03	Partner
7) Adaptive Modulation and Coding for Advanced Mobile Satellite Communication Systems	2005-2007	11,740.00	GSRT – Bilateral Cooperation (China-Greece)	Coordinator
8) Satellite Network of Excellence (SatNEx)	1/1/2004-31/12/2005	264,000.00	European Commission-IST Program	Partner
9) Advanced Telematic Systems for Vehicles	1/11/2003-31/10/2005	60,950.00	GSRT – Human Networks	Coordinator
10) Wireless CDMA Systems	1/11/2000-31/10/2005	21,000.00	Bartha Wireless Networking Systems	Coordinator
11) ESA Assessment Study of Space Activities in Greece	1/1/2004-31/10/2004	11,700.00	European Space Agency	Partner
12) Ultra Wideband Audio Video Entertainment Systems (UltraWAVES)	14/4/2002-14/10/2004	20,000.00	European Commission-IST Program	Sub-conductor
13) Feasibility Study of Digital Audio Broadcasting (DAB) Services in Greece	1/1/2002-31/12/2002	165,000.00	Hellenic Ministry of Transport and Communications	Coordinator
14) Wideband LEO/MEO Satellite Networks for Multimedia Mobile Telecommunication Systems	1/1/2000-31/12/2001	132,000.00	GSRT -PENED-99	Coordinator
TOTAL		**1,406,090.00**		

Table II: Funded Programs – Mathiopoulos (Participating Researcher)				
PROGRAM	**DURATION**	**FUNDED FOR NOA (€)**	**FUNDING AGENCY**	**PARTITIPATION ISARS-NOA**
1) Application and Evaluation of Terrestrial and Wireless Remote Sensing Methods for Early Localization, Announcement and Observation of Forest Fires	1/7/2003-31/6/2006	125,000.00	GSRT – Environment	Partner, (PI: C. Kontoes)
2) Integrated Computational Assessment of Urban Air Quality via Remote Observation System Network (ICAROS NET)	1/1/2001-31/12/2003	260,000.00	European Commission-IST Program	Partner, (PI: N. Sifakis)
3) Techniques for Internet Access via Satellite for Multimedia Applications	1/1/2002-31/12/2003	2,000.00	GSRT- Bilateral Cooperation (Greece – Italy)	Partner, [PI: N. Pavlidou (AUTH)]
4) Wireless Access Systems with Transmission and Reception Diversity	1/1/2004-31/12/2005	11,740.00	GSRT- Bilateral Cooperation (Greece-Poland)	Coordinator [PI: G. Karagiannidis (AUTH)]
5) Advanced Methods for Signal Detection and Analysis from Extraterrestrial Sources of γ- και X-Rays with Space Scientific Satellites	1/1/2006-31/6/2008	120,000.00	GSRT-PENED-03	Partner, (PI: G. Tsiropoula)

Table III: Funded Programs – Mathiopoulos (Technical Manager)				
PROGRAM	**DURATION**	**FUNDED FOR NOA (€)**	**FUNDED**	**PARTITIPATION**
Measurements Testing and Calibration of Advanced Mobile Radio Channel Test Equipment (METAMORP)*	1998-2001	2,000,000.00	European Commission – Measurements and Testing Program	Technical Manager

* This program started before joining ISARS. It was performed through a collaboration with Ericsson Hellas.

- **Transceiver Structures**
  We have proposed, analyzed, evaluated, implemented in hardware and tested many novel transmitter/receiver (transceiver) structures that significantly improve the performance of various wireless communication systems operating in fading and interference channels. Our journal publications on this subject are as follows:

  i) Fading Channels
  [R-47], [R-20], [R-12], [R-5], [R-4], [R-2][5]
  ii) Interference Channels
  [R-36], [R-18], [R-10], [R-10], [R-7], [R-6], [R-3]

In September 2005, one of his publications on the subject of optimal receivers for fading channels [R-12] has been acknowledged by the Editors of the *IEEE Journal on Selected Areas in Communications (Special Issue on Differential and Noncoherent Wireless Communications)* as one of the four most influential papers (out of the 1000+) published on this subject of the last four decades. In their editorial comment his paper is referred to as "real breakthrough" and as a "seminal paper". It should be noted that for the first time in 1989 [C-16], Makrakis and Mathiopoulos have coined in the term "Multiple Differential Detection" for the optimal receiver in fading channels. This term has now been recognized as the most generic term for maximum likelihood block-by-block detection in fading channels. For this contribution, he has been invited to write a tutorial paper on the subject in the new electronic encyclopedia Scholarpedia (www.scholarpedia.org).

- **Diversity-MIMO Techniques**
  We have proposed novel techniques that evaluate and improve the performance of diversity-MIMO systems operated over state-of-the-art fading channels. More specifically the following techniques have been studies: Selection combining, generalized selection combining, equal gain combining, maximal ratio combining for various fading channels including Rayleigh, Rician, Nakagami-m, Weibull, Hoyt, K- and generalized-K, Gamma and generalized-Gamma. We have also studied the performance and proposed performance improvement techniques for MIMO systems Journals publications, which have resulted from our research activity in this field, are as follows:
  [R-79], [R-77], [R-76], [R-73], [R-72], [R-69], [R-64], [R-63], [R-59], [R-57],
  [R-56], [R-55], [R-52], [R-51], [R-49], [R-46], [R-45], [R-44], [R-43], [R-40] [R-37],
  [R-34], [R-32], [R-31], [R-30], [R-11].

[5] The numbers in brackets (e.g. [R-x],[C-x]) refer to publications in journals and conferences listed in Section IV.I of this CV.

- **Coding Techniques**

  We have proposed, analyzed and evaluated the performance of novel coding/decoding techniques for wireless communication systems, including Direct Video Broadcasting (DVB) systems. Our research on this subject has been published in the following journal papers:
  [R-79], [R-78], [R-67], [R-66], [R-65], [R-74], [R-69], [R-68], [R-58], [R-49], [R-25], [R-20], [R-19], [R-14], [R-13], [R-9], [R-8].

- **CDMA-OFDM**

  We have studied the performance of various CDMA and OFDM systems with applications to 3G terrestrial and satellite bared telecommunication systems. We have proposed and analyzed the performance of novel techniques, e.g synchronization, PARP reduction *etc.*) which significantly improve the performance of such telecommunication systems. Journal publications on this subject are as follows:
  [R-75], [R-68], [R-48], [R-38], [R-35], [R-28].

- **Ultra Wideband (UWB)**

  We have studied the performance of UWB telecommunication systems in the presence of interference. Novel methods have been proposed to improve their multi user interference capacity performance published in:
  [R-60], [R-46].

- **Software Radio**

  We were one of the first academic research groups worldwide to investigate new software radio technologies as they can be applied to station receivers for 3G UMTS telecommunication systems. We have proposed a very powerful technique that improves dramatically the ADC resolution stringent requirements for reception of wideband multimedia signals. Our research on this subject has been published in:
  [R-22], [R-42].

- **Mobile Channel Measurements and Modeling**

  Within the framework of the EC METAMORP project, we dealt, among other research topics, with the characteristics of non-stationary mobile channel. More recently, we have implemented in an efficient way a Nakagami simulator. Previous studies on Rayleigh fading channels include a theoretical analysis of how the exact Rayleigh fading channel should be modeled. Our research in this area has been published in [R-54], [R-39], [R-33], [R-21].

- **Performance Studies in Interference Environments**
  We have performed several studies for performance evaluation and proposed performance improvement techniques for digital communication systems operating in interference environments, including:
  i) Co-channel interference (CCI) and adjacent channel interference (ACI) [R36], [R-15], [R-10]
  ii) Impulsive noise [R-40], [R-7], [R-6]
  iii) High capacity terrestrial communication systems [R-3], [R-2], [R-1]

- **Resource Management and Allocation Studies for LEO-MSS**
  We have proposed novel techniques for evaluating and improving the performance of channel resource management strategies for Low Earth Orbit Mobile Satellite Systems (LEO-MSS) supporting multi-party traffic and multi-class services, leading to the following publications [R-80], [R-71], [R-63], [R-61], [R-41].

- **Cross Layer Optimization**
  We have proposed novel cross-layer optimization techniques which perform joint adaptation of the Physical (PHY) and Application layers for WiMax and communication systems which make use of pilot tones. Our publications in this area are [R-70] and [R-62]

II.1.5 European Projects Participation

A. METAMORP (SMT4-CT96-2093)

From 1995 until 2001, he has collaborated with the research centre Forschungs und Technologie Zentrum (FTZ), Deutsche Telekom AG, in the field of measurements and channel modeling for terrestrial and satellite telecommunication systems. With this collaboration the research and development project METAMORP (Measurements Testing and Calibration of Advanced Mobile Radio-Channel Test Equipment) was established. The main purpose of METAMORP, which was running for three years (1998-2001), was to recommend new methods for the standardization of the measurements, testing and calibration procedures of the mobile channels telecommunication machines (see publication C-33).

In this project some of the most important European telecommunication organizations have participated as partners: *a)* France Telecom, Centre National d'Edutes des Telecommunications - CNET; *b)* Deutsche Telekom AG; *c)* Norwegian Telecom - Telenor Research and Development; *d)* Technische Universitaet Wien - Institute fuer Nachrichtentechnik und Hochfrequenztechnik; and *e)* Ericsson Hellas (Project Coordinator). The METAMORP was funded by the European Commission through their RTD program Standards Measurements and Testing with a budget of 2.000.000 €. His efforts in defining, organizing and proposing the METAMORP project have been recognized by all partners and therefore they have elected me as the Project Technical Manager a role which he has successfully carried out.

Due to the particularity and the importance of measurements standardization, METAMORP was supported and its research results were used by the SMG commission of the European Telecommunication System Institute (ETSI). The official purpose of the SMG commission was to designate the third generation mobile telecommunications, based on the idea of Universal Mobile Telecommunication Systems (UMTS).

B. ULTRAWAVES (IST-2001-35189)

The main purpose of the ULTRAWAVES (ULTRA Wideband Audio Video Entertainment System) project was to provide a high performance and low cost wireless home connectivity solution, supporting applications requiring home multi-streaming of high quality video and broadband multimedia as well as the IPv6 emerging protocol.

The objective was to design and implement a complete UWB-based system, optimized in terms of throughput, range, in-home/in-building performance and guaranteed multilevel QOS. A development platform will be developed to support project evaluation activities, such as different UWB techniques, smart-antenna, UWB channel model, coexistence issues, performance/range tradeoffs, *etc.*

ISARS has participated in this project as a subcontractor to one of the partners of the project (RadioLabs of Italy). As a principal investigator for ISARS, he was responsible

for system studies and the theoretical analysis of the capacity assessment of the UWB system in an interference environment.

C. SATNEX/SATNEX-II (IST-507052)

The project SatNEx (Satellite Network of Excellence) is the only Pan-European Network of Excellence (NoE) fully devoted to satellite telecommunications. In this network there are 21 European partners (Universities and Research Institutions) participating who are considered as the most important research organizations in the field of satellite telecommunications in Europe. The project has started in 2004, initially funded for 2 years, and recently extended for further funding for another 3 years, i.e. until the end of 2008 with an annual budget of 1.200.000 Euros.

ISARS has been a partner from the beginning of the project. Prof. Mathiopoulos has been the Principal Investigator from ISARS and has leaded the activities of his research group. As the group has significantly contributed to the progress of SatNEx, these efforts have been recognized by the Management Board of the project. For this reason, we were given increased responsibilities in the extension of SatNEx (i.e. the SatNEx-II project) as Work Package leaders in two research activities. Furthermore, our budget has been increased by a factor of three, whereas for other partners their budget has been reduced and two partners, because of pure performance in SatNEx, have not been allowed to participate in SatNEx-II.

II.1.6 European Commission

Since 1999, he has acted as evaluator, panel rapporteur and technical auditor for the IST program in the fields:

- Satellite and Terrestrial Telecommunications
- Information Technology
- Electronic Publishing
- Electronic Commerce
- COST 252 *"Evolution of Satellite Personal Communications from 2nd to Future Generation Systems"*
- Risk Management

More specifically, he has been appointed to several European Programs evaluation committees. The budget for these "Calls" is considerable and usually within the range of 20M€ to 60M€.

A. IST FP5 Proposal-Project Evaluator/Technical Auditor

- Evaluator for the Call "Mobile and Satellite Telecommunications", June 27 - July 5, 1999
- Evaluator and Panel Rapporteur for the Call "Mobile and Satellite Telecommunications", June 5 - June 9, 2000
- Evaluator for the complete COST-252 "Evolution of Satellite Personal Communications from 2G to Future Generations", September 2000
- Technical Auditor for the IST project OPELIX (An Open Personalized Electronic Commerce System), 3 October 2000 and 26 April 2001
- Technical Auditor for the IST project IRAIA (Getting Orientation in Complex Information Spaces as an Emergent Behavior of Autonomous Information Agents), 22 September 2001 and 12 April 2002
- Technical Auditor for the IST project SLATS (Software Libraries for Advanced Terminal Solutions), 24 June 2001

B. IST FP6 Proposal-Project Evaluator/Technical Auditor

- Evaluator for the Call "Mobile and Wireless Systems Beyond 3G", May 11-16, and June 2-6, 2003 (invitation declined)
- Evaluator and Panel Rapporteur for the Call "Improving Risk Management", November 10 -14, 2003
- Evaluator and Panel Rapporteur for the Call "Satellite Telecommunications", April 26 - 30, and May 11 – 12, 2004
- Evaluator for the Call "Satellite Telecommunications", September 12 - 16, 2005
- Evaluator for the Call "Environmental Risk Management", October 16 - 21, 2005

II.1.7 Collaboration

Since 1999, he has established formal collaborations with the following institutions and companies.

Greece

- Department of Informatics and Telecommunications, University of Athens
- Department of Physics, University of Athens
- Electrical Engineering and Computer Technology Department, University of Patras
- Computer Engineering and Informatics Department, University of Patras
- Electrical and Computer Engineering Department, Aristotle University of Thessaloniki
- Electrical and Computer Engineering Department, Democritus University of Thraki
- Institute of Informatics and Remote Sensing, National Centre of Research and Technology
- Research and Education Company for the Information Technology, Bartha Telecom
- AMTEL Hellas
- Ericsson Hellas
- Intracom
- Thermal Buses Public Company (ETHEL)
- Trolley Buses Public Piraeus, Athens and precincts (ILPAP)

Europe

- Department of Electronic Engineering, University of Rome, Tor Vergata; IT
- Department of Electronics, Computer Science and Systems, University of Bologna, IT
- Center for Communication Systems Research, University of Surrey, UK
- Department of Signal Theory, Communications and Telematics, Carlos III University of Madrid, ES
- Department of Broadband Infocommunications, Budapest University of Technology and Economics, HU
- Department of Digital Communications and Networks, Jozef Stefan Institute, SLO
- Institute of Communications and Navigations, German Aerospace Center – DLR, DE
- Group des Ecoles des Télécommunications, ENST, F
- Technical University of Vienna
- Deutsche Telecom
- Telenor R&D
- France Telecom

International

- Department of Electrical and Computer Engineering, University of British Columbia, Canada
- School of Information Technology and Engineering, University of Ottawa, Canada
- Faculty of Engineering, University of Cape Breton, Canada
- Department of Electrical Engineering, Florida Atlantic University, USA
- Communications Systems Institute, University of Southern California, USA
- Department of Electrical Engineering, Beijing University of Posts and Telecommunications, China
- Faculty of Engineering, Shandong University, China
- Department of Information Technology, Keio University, Japan
- Department of Electronic Engineering, Yonsei University, Korea
- Agency for Defense Development, Korea
- Department of Electrical and Computer Engineering, Shirindhom International Institute of Technology, Thailand

II.2 THE UNIVERSITY OF BRITISH COLUMBIA (UBC)

II.2.1 R&D Activities and Achievements

In 1989, he has appointed as an Assistant Professor of Electrical Engineering at The University of British Columbia (UBC) and an academic member of the Centre for Integrated Computer Systems Research (CICSR). From 2000 – 2003, he was holding the position of Professor, and since 2003 he has the appointment of Adjunct Professor.

During his academic career at UBC, he has started, organized and managed a large research team, which has accomplished important and international recognized achievements in the general area of Wireless Personal Communications for Terrestrial and Satellite Systems. His team's research during 1989 - 2000, was recognized with the publication of 25 papers in the most authoritative journals in the scientific area of telecommunications. Moreover, our research work was presented in 46 international conferences. It should be noted that his effort was not only focused in theoretical investigations but also in applied research. By early understanding the importance of collaboration with non-academic organism, he took the initiative and widely collaborated with industrial and governmental organism in several projects, including the following:

- Canadian Institute for Telecommunications Research (CITR), Montreal; *LEOs and MEOs for Fixed and Mobile Satellite Telecommunications, 1998-2002*
- DATUM Telegraphic Inc, Vancouver; *Software Radios for Base Stations of 3rd Generation PCS, 1999-2002*
- DATUM Telegraphic Inc, Vancouver; *Space Diversity Multiple Access for Code Division Multiple Access (CDMA) IS-95 Cellular Systems, 1998-2000*
- CAL Corporation, Ottawa; SPAR Aerospace, Montreal; *Multiple Differential Detector (MDD) Receivers for Advanced SatCom Ka-Band Terminals*, 1995
- MPR Teltech, Vancouver; *Antenna Pointing Algorithms for Advanced SatCom Personal Terminals*, 1993
- CANTEL West, Vancouver; *Transceivers for Digital Cellular Systems*, 1993-94
- Communications Research Centre, Ottawa: *Advanced TV (ATV)* Systems, 1993
- RACE Technologies, Vancouver; *High Frequency (HF) Radio Systems*, 1993
- ROGERS Cable, Vancouver; *Interference Cancellation for All-Digital HDTV*, 1993
- Space Engineering, Rome, Italy; *QAM over Impulsive Noise Channels*, 1990-91

He also taught several undergraduate, postgraduate and short courses and has supervised a numerous of undergraduate (~ 50), postgraduate (~7) students and post doc and researcher (~5). He was principal investigator for 16 research projects, total budget $ 750.000, and moreover he was member in many University committees oat UBC and other Universities.

II.2.2 Research Grants

1. P. Mathiopoulos, *Satellite Resource Management Strategies for LEO/MEO Satellite Systems,* $25.000, CITR, 2000-2002
2. P. Mathiopoulos, *Traffic Capacity Studies of Broadband GEO Satellites,* $58.000, CITR, 2000-2002
3. P. Mathiopoulos, *Wireless Multimedia Mobile/Personal Radio-communication Systems*, NSERC Operating Grant, $101.184, 1999-2003
4. P. Mathiopoulos, *Software Radios for Base Stations of 3rd Generation PCS,* Datum Telegraphic Inc., $70.000, 1999-2002
5. P. Mathiopoulos, *Space Diversity Multiple Access (SDMA) for CDMA IS-95 Digital Cellular Systems,* Datum Telegraphic Inc., $60.000, 1998-2000
6. P. Mathiopoulos, *Terrestrial and Satellite Based Personal Radio-communication Systems*, NSERC Operating Grant, $73.400, 1996-1999
7. P. Mathiopoulos, *Wireless Personal Telecommunication Networks*, Killam Research Fellowship, $18.000, 1995-1997
8. P. Mathiopoulos, *VLSI Transceivers for PCS,* B.C. Science Council, $17.000, 1994
9. P. Mathiopoulos, *Narrowband Spread Spectrum Techniques for HF Radio Systems,* R.A.C.E. Technologies Inc., $40.000, 1992
10. P. Mathiopoulos, *Wireless Personal Telecommunication Systems,* ASI Fellowship, $90.000, 1992-1995
11. P. Mathiopoulos, *All Digital HDTV Broadcasting over Coaxial Cable Systems,* B.C. Science Council, $17.000, 1992
12. P. Mathiopoulos, *Digital Transceiver Structures for Wireless Personal Communication Systems (PCS),* NSERC Operating Grant, $62.080, 1992-96
13. P. Mathiopoulos, *Digital Function Generator,* NSERC Equipment Grant, $17.790, 1989-1991
14. P. Mathiopoulos, *Power and Spectral Efficient Digital Transmission Techniques* NSERC Operating Grant, $41.550, 1989-1991
15. P. Mathiopoulos, *Portable RF Analyzer, White Gaussian Noise Set and Multi-Waveform Synthesizer,* NSERC Equipment Grant, $47.617, 1989
16. P. Mathiopoulos, *Error Floor Identification and Reduction, Strategies in Digital Transmission Systems* UBC-NSERC Grant, $15.000, 1989

[Note: In all the above research grants he is the sole principal investigator]

II.2.5 University Committees

- Coordinator of the postgraduate scholarships of the Electrical Engineering Department, UBC (1994-1996).
- Member of the commission of the University scholarships, Faculty of Graduate Studies, UBC (1994-1996).
- Coordinator of the Electrical Engineering Department for the day of the open University of UBC (1995).
- Member/President almost 60 M.A.Sc and Ph.D board enquire, UBC (1989 - 1999).
- Member of the teaching and scientific staff commission of the Electrical Engineering Department, UBC (1994-1996).
- Usher of Convocation, UBC, 1993.

II.3 UNIVERSITY OF OTTAWA

II.3.1 Research and Development Experience

Since 1985 - 1988, he worked as a research Engineer at the Digital Telecommunication laboratory of the Electrical Engineering Department of the University of Ottawa, Canada. In that position he was responsible for:

- Installation, organizing and operating of a 14/12 GHz Terrestrial -Satellite station, with transmission and reception capabilities of digital and analogical signals from the laboratory.
- Experimental measurement performance of a 64 kbit/s IJF-QPSK modem with that station and via ANIK-E satellite. The modem was implemented by SPAR Aerospace, Canada.
- Design, hardware implementation and experimental measurement of the performance of an experimental 16-QAM, 800 kbit/s modem.

II.4 RAYTHEON CANADA LIMITED

From 1981 - 1983, he worked as Design Engineer at the Air Traffic Control Department of Raytheon Canada Ltd. During his stay in Raytheon, he mainly worked on the design, development and performance improvement of the two most important Air Navigation Systems, namely the DVOR (Doppler VHF Omni Range) and DME (Distance Measuring Equipment). Both systems are widely used in international air navigation and their sell price has exceeded, in the year 1982, the value of$100.000. His responsibilities included:

- Complete system design
- Design, implementation and measurements of an 100 W (rms) power amplifier in 108 - 118 MHz
- Design and implementation of the equipment's Monitor/Control units
- Supervising of installation of 2 DVOR/DME stations in Malaysia and in Indonesia
- Preparing of teaching material (almost 200 pages) and teaching 2 courses (9 weeks duration) in Indonesia for the DVOR/DME stations operation

III PROFESSIONAL ACTIVITIES

III.1 TECHNICAL PROGRAM COMMITTEES

57. The 70th *IEEE Vehicular Technology Conference (VTC)*, Barcelona, Spain, September 2009
60. The *1st International Conference on Advanced in Satellite and Space Communications (SPACOMM)*, Colmar, France, July 2009.
59. The *IEEE GLOBECOM 2008, EHF-AEROCOMM Workshop,* New Orleans, USA, November 2008.
58. The *14th Pacific Conference on Communications*, Tokyo, Japan, October 2008.
57. The 68th *IEEE Vehicular Technology Conference (VTC)*, Calgary, Canada, September 2008
56. The *2008 IASTED International Conference on Communication Systems and Networks,* Langkawi, Malaysia, April 2008
55. The *1st International Workshop on Cross Layer Design,* Jinan, China, September 2007
54. The 3rd *International Workshop on Sequences and Applications*, Chengdu, China, Sept. 2006
53. The *1st Wireless and Rural Communication Conference,* Rome, Italy, Sept. 2007
52. The 2006 *IASTED International Conference on Communication Systems and Applications*, Banff, Canada, July 2006
51. The 4th Advanced Mobile Satellite Systems (ASMS) Conference, Herrsching, May 2006
50. The 63rd *IEEE Vehicular Technology Conference (VTC-2006)*, Melbourne, Australia, May 2006
49. The 2nd *International Workshop on Sequence Design and its Application to Communications (IWSDAC)*, Yamaguchi, Japan, October 2005
48. The *IEEE International Workshop on Satellite and Space Communications (IWSSC-2005)*, Siena, Italy, September 2005
47. The *IEEE International Conference on Sensor Networks (SENET-2005)*, Montreal, Canada, August 2005
46. The 2005 *IASTED International Conference on Communication Systems and Applications*, Banff, Canada, July 2005
45. The 2005 *IASTED International Conference on Wireless and Optical Communication Systems*, Krahi, Thailand, April 2005
44. The 2004 *IASTED International Conference on Wireless and Optical Communication Systems*, Banff, Canada, July 2004
43. The *IEEE International Conference on Communications (ICC-2004)*, Paris, France, June 2004
42. The *IEEE Networking Conference 2004*, Athens, Greece, May 2004
41. The 59th *2004 IEEE Vehicular Technology Conference (VTC-2004),* Milan, Italy, May 2004
40. The 2002 *International Conference on Telecommunications (ITC-2002)*, Beijing, China, June 2002

39. The 7th *Ka-Band Satellite Conference*, Santa Margharita, Ligure, Italy, September 2001
38. The 2001 *International Conference on Telecommunications (ITC-2001)*, Bucharest, Romania, June 2001
37. *COM-CON VIII / The 8th International Conference in Communications and Control*, Rethymnon, Greece, June 2001
36. The 52nd *2001 IEEE Vehicular Technology Conference (VTC-2001),* Rhodes, Greece, May 2001
35. The *European Communication (Eurocom) Conference*, Munich, May 2000
34. The 51st *IEEE Vehicular Technology Conference (VTC-2000),* Tokyo, Japan, May 2000
33. *IEEE GLOBECOM '99*, Rio de Janeiro, Brazil, December 1999
32. The *1999 IEEE Symposium on Intelligent Signal Processing Techniques*, Bangkok, Thailand, December 1999
31. The 50th *IEEE Vehicular Technology Conference (VTC)*, Amsterdam, The Netherlands, November 1999
30. The 5th *European Conference on Satellite Communications (ECSC-5)*, Toulouse, France, November 1999
29. The *10th International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC '99)*, Kyoto, Japan, October 1999
28. The 1999 *International Conference on Telecommunications (ITC-1999)*, Chejo, Korea, June 1999
27. *COM-CON VII / The 7th International Conference in Communications and Control*, Athens, Greece, June 1999
26. The *1999 Vehicular Technology Conference (VTC '99)*, Houston, USA, May 1999;
25. The *1999 IEEE MTT-S International Topical Symposium on Technologies for Wireless Applications*, Vancouver, Canada, February 1999
24. The *1998 Workshop on Multiaccess, Mobility and Teletrafic for PCS*, Washington, DC, USA, October 1998
23. The *9th International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC '98),* Boston, USA, October 1998
22. The 5th *International Conference on Telecommunications*, Chalkidiki, Greece, June 1998
21. The *1997 Workshop on Multiaccess, Mobility and Teletrafic for PCS*, Melbourne, Australia, December 1997
20. The *8th International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC '97),* Finland, October 1997
19. *COM-CON VI / The 6th International Conference in Communications and Control*, Corfu, Greece, June 1997
18. The *1997 IEEE MTT-S International Topical Symposium on Technologies for Wireless Applications*, Vancouver, Canada, February 1997
17. *International Workshop on Mobile Communications*, Thessaloniki, Greece, September 1996
16. The *7th International Symposium on Personal, Indoor, and Mobile radio Communications (PIMRC '96),* Taipei, Taiwan, October 1996

15. The *1996 Workshop on Multiaccess, Mobility and Teletrafic for PCS*, Paris, France, June 1996
14. The *3rd International Conference on Electronics, Circuits and Systems (ICECS '96),* Rhodos, Greece, October 1996
13. The *4th IEEE International Conference on Universal Personal Communications (ICUPC '95),* Tokyo, Japan, November 1995
12. The *6th International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC '95)*, Toronto, Ontario, Canada, September 1995
11. The *1995 IEEE Workshop on Neural Networks for Signal Processing*, Cambridge, MA, USA, August 1995
10. *COM-CON V / The 5th International Conference on Advances in Communication and Control*, Rethymnon, Greece, June 1995
9. The *1995 IEEE Microwave Theory and Techniques (MTT) Topical Symposium on Technologies for Wireless Applications*, Vancouver, B.C., February 1995
8. *WIRELESS 94 / The 6th International Conference on Wireless Communications*, Calgary, Alberta, Canada, July 1994
7. *WIRELESS 93 / The 5th International Conference on Wireless Communications*, Calgary, Alberta, Canada, July 1993
6. *COM-CON IV / The 4th International Conference on Advances in Communication and Control: Telecommunications-Signal Processing From Defense to Commerce*, Rhodes, Greece, June 1993
5. The *1993 IEEE Pacific Rim Conference on Communications, Computer and Signal Processing*, Victoria, B.C., Canada, May 1993
4. The *1992 Canadian Conference on Electrical and Computer Engineering (CCECE-92)*, Toronto, Ontario, Canada, September 1992
3. *IEEE GLOBECOM '92*, Orlando, Florida, USA, November 1992
2. The *1991 International Symposium on Personal Indoor and Mobile Communications*, London, U.K., September 1991
1. *IEEE SUPERCOMM/ICC '90*, Atlanta, Georgia, USA, April 1990

III.2 TECHNICAL COMMITTEES

Since 1988, he is a member at the following committees of the *IEEE Communication Society*:

- Satellite and Space Communications
- Communication Theory
- Radio Communication
- Personal Communication Systems

He have been one of the three members of the commission for the selection of the president of the Satellite and Space Technical Committee in 1994. It should be noted that he was the only member of the commission from the academic field.

- National representative in the European Commission (COST 273 και 271, Space Advisory Group)

III.3 REVIEWER -EXAMINER

III.3.1 Journals

- *IEEE Transactions on Communications*
- *IEEE Transactions on Vehicular Technology*
- *IEEE Transactions on Information Theory*
- *IEEE Journal on Selected Areas in Communications*
- *IEEE Communications Magazine*
- *IEE Proceedings Part I and F*
- *International Journal of Satellite Communications*

III.3.2 Proposals

- NSERC (Canada)
- NSF (USA)
- Israeli Science Foundation
- Australian Science Foundation
- GSRT

III.3.3 Professional Engineers of BC (1994 - 1996)

Examiner at the following courses: “Advanced Electronics”, “Basics of Circuits and Power”, “Communications”, “Advanced Electronics”, “Electrical and Electronic Engineering”, “Advanced Circuit Analysis and Design”.

III.4 MEMBERSHIP IN PROFESSIONAL SOCIETES

- Senior Member, *IEEE* (since 1994)
- Member, Association of Professional Engineers and Geoscientists of BC, Canada (since 1993)
- Member, Technical Chamber of Greece (since 1979)

III.5 SCIENTIFIC MEETINGS ORGANIZATION

- Two days meeting for the evaluation of the research and evolution actions of the Greek organizations for the Space, 6 and 7 April 2004 (150 participations)
- Annual meeting of the SatNEx program plenum, 4 - 6 April 2005 (70 participations)

III.6 GUEST SPEAKER IN PUBLIC MEDIA

- NET – The history of the National Observatory of Athens
- 5 interviews in radio stations, for wireless telecommunication subjects

IV PUBLICATIONS

IV.1 PUBLICATIONS IN REFEREED ARCHIVAL JOURNALS

R-83 Z. Wang, D. Makrakis and **P. T. Mathiopoulos**, "Optimal channel portioning and channel utilization for multi-class traffic in LEO-MSS," to appear in the *IEEE Transactions on Aerospace and Electronic Systems,* December 2010

R-82 S. Papaharalabos, D. Benmayor, **P. T. Mathiopoulos,** and P. Fan**,** "Performance Comparisons and Improvements of Channel Coding Techniques for DVB-SH and ETSI SDR European Digital Satellite Multimedia Broadcasting", to be published in the *IEEE Transactions on Broadcasting*, December 2010

R-81 F. T. Foukalas, **P. T. Mathiopoulos** and G. T. Karestos, "Joint optimal power allocation and sensing threshold for SU's capacity maximisation in SS CNRs," *IET Electronic Letters,* 30th September 2010,

R-80 G. C. Alexandropoulos and **P. T. Mathiopoulos, "**Selection diversity receivers over arbitrarily correlated generalized Gamma fading channels", *IET – Communications,* pp. 1253 – 1265, July 2010

R-79 D. Benmayor, **P. T. Mathiopoulos** and P. Constantinou**, "**Rate-compatibla IRA codes using quadratic congruential extension sequences and puncturing", *IEEE Communication Letters,* pp. 441 – 443, May 2010

R-78 G. Ropokis, A. A Rontogiannis, P. T. Mathiopoulos and K. Berberidis, "An exact performance analysis of MRC / OSTBC over generalized fading channels", *IEEE Transactions on Communications*, pp. 2486 – 2492, September 2010

R-77 G. C. Alexandropoulos, **P. T. Mathiopoulos** and N. C. Sagias, "Switch-and-Examine diversity over arbitrary correlated Nakagami-m fading channels," *IEEE Transactions on Vehicular Technology*, pp. 2080 – 2087, May 2010

R-76 D. Benmayor, S. Papaharalabos, **P. T. Mathiopoulos, G. Tsiropoula** and P. Constantinou**, "**Design of efficiently encodable rate-compatible LDPC codes using Vandermode extension matrices", *Wireless Personal Communications, Springer Verlag,* on-line publication, DOI 10.1007/s11277-010-9969-8 May 2010

R-75 R. Pedone, M. Villanti, G. E. Corazza, A. Vanelli-Coralli and **P. T. Mathiopoulos**, "Frame synchronization in frequency uncertainty," *IEEE Transactions on Communications,* pp. 1235 – 1245, April 2010.

R-74 H. Zhao, P. Fan, **P. T. Mathiopoulos** and S. Papaharalabos "On SNR estimation techniques for turbo decoding over uncorrelated Rayleigh fading channels with unknown fading parameters," *IEEE Transactions on Vehicular Technology,* pp. 4955 - 4961, November 2009.

C-73 Z. G. Papadimitriou, **P. T. Mathiopoulos** and N. C. Sagias, "The trivariate and quadrivariate Weibull fading distribution with arbitrary correlation and their application

to diversity reception," in the *IEEE Transactions on Communications,* pp. 3230 - 3234, November 2009.

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