

出國報告 (出國類別：國際會議)

**參加 PIERS 2015
國際學術研討會議**

服務機關：國立虎尾科技大學飛機工程系

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出國期間：2015/07/04~2015/07/11

報告日期：2015/08/11

摘要

PIERS 2015 Prague (Progress In Electromagnetics Research Symposium) 為全球電磁領域非常重要之國際學術研討會。本年度在捷克布拉格舉辦，研討會為期四天(7/06 – 7/09)，規模非常盛大，共規劃 136 個論文發表場次，超過 2000 篇論文發表。會議期間，除了積極參與聆聽各個不同主題場次所發表的最新論文外，我們也發表一篇專業論文，論文標題為：Dual-band Microstrip Antenna with Defected Ground Structure for WLAN Application，論文內容探討一種新的接地面鏤空結構之微帶線雙頻天線，可適用於無線區域網路之傳輸。

參加此次研討會除了發表自己近期的研究成果並與來自世界各地的專家學者面對面討論外，同時也吸收目前最新的研究主題與方向。另外，也可以一睹國際知名學者的風采及研究精神，雖然只是短暫的時間，但卻受益良多。

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壹、目的

本次出國之首要目的為發表近期之研究論文，並經由與世界各地學者專家即時地討論互動，進而強化我們的研究成果。其次，藉由參與國際研討會，所有最新的研究成果與主題，均可以在短短幾天的會期內做一個快速地瀏覽。而大會提供的資料更是非常寶貴的參考資料，對於未來的研究將有莫大的助益。最後，在會場中可以認識各國的研究人員與專業人士，除了擴展本身的研究視野，並可增進與國內外學者的交流機會。此外，也可進行國民外交，讓各國人士認識台灣，提升台灣的國際知名度。

基於上述之目的，PIERS 2015 (Progress in Electromagnetics Research Symposium)為我們所選擇參與的研討會。首先，PIERS 2015 包含了所有電磁相關之各個研究領域，參與此研討會必可接觸到各領域的最新發展狀況，提升本身的研究能力。PIERS 2015 有超過 2000 篇論文投稿，參與之研究人員眾多，各個領域、各個國家與地區及各個年齡層的研究人員皆有，參與此一會議除了專業上的學術研討外，也可認識許許多多的朋友，達到專業與人文之雙向交流。

貳、過程

PIERS 2015 (Progress in Electromagnetics Research Symposium) 在捷克布拉格的 Top Hotel Praha 舉辦，該酒店號稱歐洲最大的會議及住宿酒店之一，會議空間廣闊，也才足以容納此種大型研討會。

一、 議場主題

會議共分成五大主軸：

1. CEM, EMC, Scattering and Electromagnetic Theory.
2. Metamaterials, Plasmonics and Complex Media.
3. Optics and Photonics.
4. Antennas and Microwave Technologies.
5. Remote Sensing, Inverse Problems, Imaging, Radar and Sensing.

除了一般性的論文發表場次外，大會安排了許多的 keynote talk，總共有 37 篇的 keynote talk，規劃為 26 個特殊場次的 Focus Section。詳細如第 3-6 頁。

二、 會議議程

會議期間自 7/06 起至 7/09 止共 4 天，詳細議程參考第 7-10 頁。我們的論文發表時間為 7/08 上午。

三、報告議題

我們發表的論文主題為：**Dual-band Microstrip Antenna with Defected Ground Structure for WLAN Application**，近代由於各式無線通訊蓬勃發展，天線的設計著重在可於多個頻帶操作。我們的論文提出一種新型的接地面鏤空結構之微帶線雙頻印刷天線。論文內容除了利用 CST 電磁模擬軟體模擬外，並實作天線雛型做實際量測，實驗結果發現，此一天線具備雙頻帶特性，分別為 2.28 – 2.78 GHz (500 MHz 頻寬) 及 5.14 – 6.35 GHz (1.37 GHz 頻寬)。兩個頻帶的平均增益分別是 1.5 及 2dBi，也都具備傳統的類單極輻射場型。天線的實際大小僅 25 mm x 25 mm。論文摘要請參見附錄。



PIERS 2015 in Prague Advance Program

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Session	Name	Date/Room
- 1A4	3_FocusSession.SC3: Numerical Modeling of Ultrashort Laser Pulse Propagation in Transparent Materials: Micro/nanomodification, Part 1 <i>Organized by Nadezhda M. Bulgakova, Vladimir P. Zhukov, and Tomas Mocek</i> <i>Chaired by Leonid V. Zhigilei and Nadezhda M. Bulgakova</i>	2015-07-06 AM D
08:50 [Keynote]	Nonlinear Energy Deposition into Aqueous Media by Tightly Focused Laser Pulses: Tracking of Free-electron Density, Temperature Evolution, and Hydrodynamic Phenomena in a Large Range of Laser Pulse Durations and Wavelengths [Keynote] • Alfred Vogel (University of Lubeck, Germany), Xiao-Xuan Liang (University of Lubeck, Germany), Sebastian Freidank (University of Lubeck, Germany), and Norbert Linz (University of Lubeck, Germany) [Abstract: PDF]	
11:00 [Keynote]	Laser Energy Deposition in Glasses with Bessel Beams [Keynote] • Arnaud Couairon (Ecole Polytechnique, France), V. Jukna (Ecole Polytechnique, France), S. Minardi (Friedrich-Schiller-University Jena, Germany), O. Jadrkiewicz (CNR and CNISM UdR Com, Italy), M. Selva (University of Insubria and CNISM UdR Como, Italy), M. Lamperti (University of Insubria and CNISM UdR Como, Italy), P. Di Trapani (University of Insubria and CNISM UdR Como, Italy), N. S. Shcheblanov (Lyon University, France), R. Stoian (Université de Lyon, France), Tatiana E. Itina (Lyon University, France), C. Xie (Université de Franche-Comte, France), J. Zhang (Université de Franche-Comte, France), John M. Dudley (Université de Franche-Comte, France), and Francois Courvoisier (Université de Franche-Comte, France) [Abstract: PDF]	
- 1A_10	3_FocusSession.SC3: Advances in Optical Networking <i>Organized by Jiajia Chen and Ming Xia</i> <i>Chaired by Jiajia Chen</i>	2015-07-06 AM J
09:20 [Keynote]	Advancements in Next Generation Broadband Optical Access Networks [Keynote] • Cedric F. Lam (Google, USA) [Abstract: PDF]	
- 1A_11	1_FocusSession.SC1: Casimir Effect and Heat Transfer 1 <i>Organized by Mauro Antezza and Brahim Guizal</i> <i>Chaired by Mauro Antezza and Brahim Guizal</i>	2015-07-06 AM K
08:10 [Keynote]	Experimental Study of Near-field Radiative Heat Transport [Keynote] • B. Song (University of Michigan, USA), K. Kim (University of Michigan, USA), Y. Ganjeh (University of Michigan, USA), S. Sadat (University of Michigan, USA), W. Lee (University of Michigan, USA), W. Jeong (University of Michigan, USA), D. R. Thompson (University of Michigan, USA), A. R. Fiorino (University of Michigan, USA), Victor Fernandez-Hurtado (Universidad Autonoma de Madrid, Spain), Johannes Feist (Universidad Autonoma de Madrid, Spain), Francisco J. Garcia-Vidal (Universidad Autonoma de Madrid, Spain), Juan Carlos Cuevas (Universidad Autonoma de Madrid, Spain), Pramod Reddy (University of Michigan, USA), and Edgar Meyhofer (University of Michigan, USA) [Abstract: PDF]	
11:20 [Keynote]	Weak Thermal Contact is Not Universal for Work Extraction [Keynote] • H. Wilming (Freie Universität Berlin, Germany), R. Gallego (Freie Universität Berlin, Germany), and Jens Eisert (Freie Universität Berlin, Germany) [Abstract: PDF]	
- 1A_13	3_FocusSession.SC3: Solid-state Quantum Photonics 1 <i>Organized by Luca Sapienza and Jin Liu</i> <i>Chaired by Luca Sapienza</i>	2015-07-06 AM M
09:05 [Keynote]	Decoherence of Semiconductor Quantum Dots Coupled to Micro and Nanocavities [Keynote] • Jesper Mork (Technical University of Denmark, Denmark), Dara McCutcheon (Technical University of Denmark, Denmark), Anders Nysteen (Technical University of Denmark, Denmark), and Niels Gregersen (Technical University of Denmark, Denmark) [Abstract: PDF]	
10:20 [Keynote]	High-performance Single-quantum Dot Nanophotonic Devices through Photoluminescence Imaging [Keynote]	

		<ul style="list-style-type: none"> • Kartik Srinivasan (National Institute of Standards and Technology, USA), Marcelo Davanco (National Institute of Standards and Technology, USA), Antonio Badolato (University of Rochester, USA), and Luca Sapienza (University of Southampton, United Kingdom) 	
-	1A_14	2_FocusSession.SC2: PT Symmetry, Reciprocity, Nonlinear Phenomena Organized by Kin Hung Fung and Zheng Wang Chaired by Kin Hung Fung	2015-07-06 AM N
	08:10 [Keynote]	Whispering-gallery-mode Optical Resonators around an Exceptional Point [Keynote] <ul style="list-style-type: none"> • B. Peng (Washington University, USA), Sahin Kaya Ozdemir (Washington University in St. Louis, USA), Stefan Rotter (Vienna University of Technology (TU Wien), Austria), H. Yilmaz (Washington University, USA), M. Lierzter (Vienna University of Technology (TU Wien), Austria), Faraz Monifi (Washington University in St. Louis, USA), C. M. Bender (Washington University, USA), Franco Nori (University of Michigan, USA), and Lan Yang (Washington University in St. Louis, USA) 	
		[Abstract: PDF]	
-	1P1	2_FocusSession.SC2: Nonlocal and Spatially Dispersive Electromagnetic Media Organized by Yun Lai and Zhi Hong Hang Chaired by Yun Lai and Zhi Hong Hang	2015-07-06 PM A
	13:10 [Keynote]	Nanophotonics in Material-systems of Large Sizes [Keynote] <ul style="list-style-type: none"> • Marin Soljacic (Massachusetts Institute of Technology, USA) 	
		[Abstract: PDF]	
	17:20 [Invited]	Nonlocal Effective Medium Theory and Its Relation with Zak Phase in Two-dimensional Photonic Crystals [Keynote] <ul style="list-style-type: none"> • Meng Xiao (The Hong Kong University of Science and Technology, China), Xueqin Huang (The Hong Kong University of Science and Technology, China), Anan Fang (The Hong Kong University of Science and Technology, China), Z. Q. Zhang (The Hong Kong University of Science and Technology, China), and Che Ting Chan (The Hong Kong University of Science and Technology, China) 	
		[Abstract: PDF]	
-	1P2	SC3: Nanoscale Platforms for Molecular Sensing Organized by Hyuck Choo and Monika Fleischer Chaired by Hyuck Choo and Monika Fleischer	2015-07-06 PM B
	13:00 [Keynote]	Recent Progress in Nanoscale Sensing Using Surface-enhanced Raman Scattering [Keynote] <ul style="list-style-type: none"> • Kenneth B. Crozier (The University of Melbourne, Australia) 	
		[Abstract: PDF]	
	13:30 [Keynote]	Hot Spots of Plasmonic Nanostructures and Their Spectroscopic Potential for Molecular Probing at the Nanoscale and at the Single Molecule Level [Keynote] <ul style="list-style-type: none"> • Katrin Kneipp (Technical University of Denmark, Denmark), Harald Kneipp (Technical University of Denmark, Denmark), and Janina Kneipp (Humboldt Universität zu Berlin, Germany) 	
		[Abstract: PDF]	
-	1P3	5_FocusSession.SC5: Imaging, Inverse Scattering and Remote Sensing 2 Organized by Xiuzhu Ye and Xudong Chen Chaired by Qing Huo Liu and Xiuzhu Ye	2015-07-06 PM C
	13:00 [Keynote]	Source Reconstruction from Near- and Far-field Data with Antenna and Radome Applications [Keynote] <ul style="list-style-type: none"> • Mats Gustafsson (Lund University, Sweden) 	
		[Abstract: PDF]	
	13:30 [Keynote]	Reconstruction of 3D Anisotropic Magnetodielectric Objects with the Mixed Order BCGS-FFT and DBIM [Keynote] <ul style="list-style-type: none"> • Zhiru Yu (Duke University, USA) and Qing Huo Liu (Duke University, USA) 	
-	1P_11	1_FocusSession.SC1: Casimir Effect and Heat Transfer 2 Organized by Mauro Antezza and Brahim Guizal Chaired by Mauro Antezza and Brahim Guizal	2015-07-06 PM K
	17:40 [Keynote]	Probing the Surface with Atoms [Keynote] <ul style="list-style-type: none"> • Ron Folman (Ben-Gurion University of the Negev, Israel) 	
		[Abstract: PDF]	
-	1P_14a	SC3: Silicon Photonic Integration and Devices for Optical Communications and Interconnects Organized by Lin Yang and Hon Ki Tsang Chaired by Lin Yang and Hon Ki Tsang	2015-07-06 PM N
	13:50 [Keynote]	Quantum Dot Lasers for Silicon Photonics [keynote] <ul style="list-style-type: none"> • Yasuhiko Arakawa (The University of Tokyo, Japan) 	
		[Abstract: PDF]	
-	1P_14b	3_FocusSession.SC3: Nonlinear Optics: Novel Phenomena, Materials and Applications 1 Organized by Gaetano Assanto and Goery Genty Chaired by Gaetano Assanto and Goery Genty	2015-07-06 PM N
	16:00 [Keynote]	Photonic Topological Insulators [Keynote] <ul style="list-style-type: none"> • Mordechai Segev (Technion --- Israel Institute of Technology, Israel), Mikael C. Rechtsman (Technion --- Israel Institute of Technology, Israel), Yonatan Plotnik (Technion --- Israel Institute of Technology, Israel) 	

		of Technology, Israel), Yaakov Lumer (Technion — Israel Institute of Technology, Israel), Miguel A. Bandres (Technion — Israel Institute of Technology, Israel), Julia M. Zeuner (Friedrich-Schiller-Universität Jena, Germany), and Alexander Szameit (Friedrich-Schiller-Universität Jena, Germany) [Abstract: PDF]	
-	2A2	3_FocusSession.SC3: Optical Properties of Resonant Dielectric and Plasmonic Nanostructures 1 Organized by Isabelle Staude and Dragomir N. Neshev Chaired by Isabelle Staude and Manuel Decker	2015-07-07 AM B
	10:20	[Keynote] Refractory Plasmonics for Harsh Environment [Keynote] • *** ***, Alexander V. Kildishev (Purdue University, USA), Alexandra Boltasseva (Purdue University, USA), and Vladimir M. Shalaev (Purdue University, USA) [Abstract: PDF]	
-	2A_14	3_FocusSession.SC3: Nonlinear Optics: Novel Phenomena, Materials and Applications 2 Organized by Gaetano Assanto and Goery Genty Chaired by Gaetano Assanto	2015-07-07 AM N
	08:40	[Keynote] Playing Billiard in Laser Micro-cavities: A Test-bed for Semi-classical Physics [Keynote] • Joseph Zyss (Ecole Normale Supérieure de Cachan, France), Clement Lafargue (Ecole Normale Supérieure de Cachan, France), Stefan Bittner (Ecole Normale Supérieure de Cachan, France), and Melanie Lebelant (Ecole Normale Supérieure de Cachan, France) [Abstract: PDF]	
	09:10	[Keynote] Liquid Crystals for Nonlinear Optics with Femtoseconds --- CW Lasers [Keynote] • Iam-Choon Khoo (Pennsylvania State University, USA) [Abstract: PDF]	
-	2P1	2_FocusSession.SC2: Planar Optics Based on Metasurfaces 2 Organized by Yongmin Liu and Shuang Zhang Chaired by Shuang Zhang and Shulin Sun	2015-07-07 PM A
	13:10	[Keynote] Metasurfaces' Solutions for Polarization Spectroscopy, Optical Activity, Colored Phase Holograms and Compact Nano-cavities [Keynote] • Vladimir M. Shalaev (Purdue University, USA), Amr M. Shaltout (Purdue University, USA), Jingjing Liu (Purdue University, USA), Sajid Choudhury (Purdue University, USA), Alexandra Boltasseva (Purdue University, USA), and Alexander V. Kildishev (Purdue University, USA) [Abstract: PDF]	
-	2P2b	2_FocusSession.SC2: Plasmonic Nanolasing Organized by Ortwin Hess Chaired by Ortwin Hess	2015-07-07 PM B
	15:40	[Keynote] Plasmonic Stopped-light Nanolasing [Keynote] • Ortwin Hess (Imperial College London, United Kingdom) [Abstract: PDF]	
-	2P4	2_FocusSession.SC2&3: Scalable and Hierarchical Nanofabrication for Deep Sub-wavelength Nanophotonics Organized by Junsuk Rho and Laura Na Liu Chaired by Junsuk Rho	2015-07-07 PM D
	13:40	[Keynote] Quantum-dot Plasmonics [Keynote] • David J. Norris (ETH Zurich, Switzerland) [Abstract: PDF]	
	14:10	[Keynote] DNA-based Functional Plasmonic Particle Assemblies [Keynote] • Tim Liedl (Ludwig-Maximilians-University of Munich, Germany) [Abstract: PDF]	
-	2P8b	3_FocusSession.SC3&4: Microwave Photonics for Wireless Spectrum Management 1 Organized by David Marpaung and Maurizio Burla Chaired by David Marpaung and Maurizio Burla	2015-07-07 PM H
	16:20	[Keynote] The Path towards 100 Gbit/s Wireless Communications [Keynote] • Juerg Leuthold (Institute of Electromagnetic Fields (IEF), ETH Zurich, Switzerland), *** ***, *** ***, *** ***, and Christian Hafner (Institute of Electromagnetic Fields (IEF), ETH Zurich, Switzerland) [Abstract: PDF]	
-	3A4	3_FocusSession.SC3: Numerical Modeling of Ultrashort Laser Pulse Propagation in Transparent Materials: Micro/nanomodification, Part 2 Organized by Nadezhda M. Bulgakova, Vladimir P. Zhukov, and Tomas Mocek Chaired by Jeremy R. Gulley and Sergey I. Kudryashov	2015-07-08 AM D
	10:20	[Keynote] Computer Modeling of Material Modification by Short Laser Pulses and Optically-induced Surface Acoustic Waves [Keynote] • Leonid V. Zhigilei (University of Virginia, USA), Chengping Wu (University of Virginia, USA), Maxim V. Shugaev (University of Virginia, USA), and Vladimir Yu. Zaitsev (University of Virginia, USA) [Abstract: PDF]	
-	3A7a	SC3: Non-reciprocal and Topological Features in Photonic Systems	2015-07-08 AM

		Organized by Mohammad Hafezi and Sebastian Hofferberth Chaired by Mohammad Hafezi	G
	09:20 [Keynote]	Chiral Interaction of Light and Matter in Confined Geometries [Keynote] • Arno Rauschenbeutel (Vienna University of Technology, Germany) [Abstract: PDF]	
-	3A7b	SC3: Strong Light-matter Coupling and Strongly Interacting Photons 1 Organized by Mohammad Hafezi and Sebastian Hofferberth Chaired by Mohammad Hafezi	2015-07-08 AM G
	11:00 [Keynote]	Single Molecules Coherently Coupled to a Dielectric Nanoguide [Keynote] • Vahid Sandoghdar (Max-Planck-Institute for the Science of Light, Germany) [Abstract: PDF]	
-	3A8b	3_FocusSession.SC3&4: Microwave Photonics for Wireless Spectrum Management 2 Organized by David Marpaung and Maurizio Burla Chaired by David Marpaung and Maurizio Burla	2015-07-08 AM H
	10:40 [Keynote]	Software-defined Integrated Microwave Photonics for Radio Access Networks [Keynote] • Daniel Perez (Universitat Politecnica de Valencia, Spain), Ivana Gasulla (Universitat Politecnica de Valencia, Spain), and Jose Capmany Franco (Instituto de Telecomunicaciones y Aplicaciones Multimedia, Spain) [Abstract: PDF]	
-	3A_11	SC1: Computational Techniques in Electromagnetics and Applications 1 Organized by Yoichi Okuno and Tsuneki Yamasaki Chaired by Yoichi Okuno and Akira Komiyama	2015-07-08 AM K
	08:50 [Keynote]	Sesquicentennial Year of Maxwell's Equations and Computational Electromagnetics [Keynote] • Weng Cho Chew (University of Illinois, USA) [Abstract: PDF]	
-	3A_13	3_FocusSession.SC3&2: Disordered Photonics 1 Organized by Pedro David Garcia Chaired by Riccardo Sapienza	2015-07-08 AM M
	08:00 [Keynote]	Random Optical Media for Third Generation Photovoltaics [Keynote] • Hernan Miguez (Spanish National Research Council, Spain) [Abstract: PDF]	
	08:30 [Keynote]	Innovative Materials and Methods for Disorder Photonics [Keynote] • Alvaro Blanco (Instituto de Ciencia de Materiales de Madrid ICMM-CSIC, Spain) and Ceferino Lopez Fernandez (Instituto de Ciencia de Materiales de Madrid (CSIC), Spain) [Abstract: PDF]	
-	3P1	2_FocusSession.SC2: Transformation Optics Organized by Hongsheng Chen and Yu Luo Chaired by Hongsheng Chen and Yu Luo	2015-07-08 PM C
	13:10 [Keynote]	Metamaterials and Transformation Optics for Single-photon Emitters [Keynote] • Vladimir M. Shalaginov (Purdue University, USA), M. Y. Shalaginov (Purdue University, USA), N. Kinsey (Purdue University, USA), Paul R. West (Purdue University, USA), M. Ferrera (Purdue University, USA), Alexander V. Kildishev (Purdue University, USA), and Alexandra Boltasseva (Purdue University, USA) [Abstract: PDF]	
	15:40 [Keynote]	Passive and Active Devices for Spoof Surface Plasmon Polaritons in the Microwave Frequency [Keynote] • Tie Jun Cui (Southeast University, China) [Abstract: PDF]	
-	3P2	3_FocusSession.SC3: Optical Properties of Resonant Dielectric and Plasmonic Nanostructures 2 Organized by Isabelle Staude and Dragomir N. Neshev Chaired by Isabelle Staude and Rupert Francis Oulton	2015-07-08 PM B
	13:35 [Keynote]	Optimum Forward Light Scattering with High Refractive Index Nanoparticles [Keynote] • Boris S. Luk'yanchuk (Agency for Science, Technology and Research, Singapore), Nikolai V. Voshchinnikov (St Petersburg University, Russia), Ramon Paniagua-Dominguez (Agency for Science, Technology and Research, Singapore), and Arseniy I. Kuznetsov (Agency for Science, Technology and Research, Singapore) [Abstract: PDF]	
-	3P_11	SC2&3: Optoelectronics and Photonics of Graphene and Two-dimensional Materials Organized by Giulio Cerullo and Costantino De Angelis Chaired by Costantino De Angelis	2015-07-08 PM K
	13:00 [Keynote]	Graphene Photonics and Optoelectronics [Keynote] • Andrea C. Ferrari (University of Cambridge, UK)	
	14:50 [Keynote]	Graphene Nanophotonics [Keynote] • F. Javier Garcia De Abajo (ICFO Institut de Ciències Fòtoniques, Mediterranean Technology Park, Spain) [Abstract: PDF]	

	MONDAY AM 8:00 July 6		MONDAY PM 13:00 July 6	TUESDAY AM 8:00 July 7		TUESDAY PM 13:00 July 7	
ROOM A	1A1a - Planar Optics Based on Metasurfaces - 1	1A1b - Oral Presentations for Best Student Paper Awards - Metamaterials, Plasmonics	1P1 - Nonlocal and Spatially Dispersive Electromagnetic Media	2A1 - Optimal Antennas		2P1 - Planar Optics based on Metasurfaces 2	
ROOM B	1A2 - THz Metamaterials: Fundamentals and Applications		1P2 - Nanoscale Platforms for Molecular Sensing	2A2 - Optical Properties of Resonant Dielectric and Plasmonic Nanostructures 1		2P2a - Nonlinear Plasmonics 2P2b - Plasmonic Nanolasing	
ROOM C	1A3a - Imaging, Inverse Scattering and Remote Sensing 1	1A3b - Oral Presentations for Best Student Paper Awards - -- Remote Sensing, etc.	1P3 - Imaging, Inverse Scattering and Remote Sensing 2	2A3 - Single Photonics: Integrated Optics for On-chip Manipulation of Single Photons		2P3 - Advanced Optofluidics: Optical Control and Photonics in Microfluidics	
ROOM D	1A4 - Numerical Modeling of Ultrashort Laser Pulse Propagation in Transparent Materials: Micro/nanomodification, Part 1		1P4a - Laser Writing of Optical Waveguides and Optical Components in Novel Materials	2A4 - Manipulating Light-matter Interaction by Plasmonics 2		2P4 - Scalable and Hierarchical Nanofabrication for Deep Sub-wavelength Nanophotonics	
ROOM E	1A5 - Antennas, Signals, HPEM and EMC Problems 1		1P5a - Antennas, Signals, HPEM and EMC Problems 2	1P5b - Antenna Theory and Radiation 1	2A5 - Ultra-thin Metal-dielectric Structured Surfaces and Thin Films for Antireflection, Light Trapping, and Perfect Absorption 1		2P5a - Light Carrying Orbital Angular Momentum: Theory and Applications 2P5b - Ultra-thin Metal-dielectric Structured Surfaces and Thin Films 2
ROOM F	1A6 - Complex Analysis and Convex Optimization in Electromagnetics		1P6 - Advances in Diffraction Gratings Theories	2A6a - Nonlinear Optical Fibers for Sensing and Signal Processing 2A6b - Ultrafast Fiber Lasers	2P6a - Semiconductor Nanowires: Novel Optical and Electrical Properties 2P6b - Translational and Clinical Research towards Microwave Medical Imaging		
ROOM G	1A7 - Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applications 1		1P7 - Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applications 2	2A7 - Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applications 3		2P7 - Novel Mathematical Methods in Electromagnetics	
ROOM H	1A8 - Model-order Reduction and Uncertainty Quantification		1P8 - Recent Advances of Metamaterials for Novel Electromagnetic and Photonic Devices 1	2A8 - Recent Advances of Metamaterials for Novel Electromagnetic and Photonic Devices 2		2P8a - Luminescent Materials and Devices 1	2P8b - Microwave Photonics for Wireless Spectrum Management 1

	MONDAY AM 8:00 July 6	MONDAY PM 13:00 July 6	TUESDAY AM 8:00 July 7	TUESDAY PM 13:00 July 7
ROOM I	1A9 - Electromagnetic Field Transformations for Measurements and Simulations	1P9 - Analog & RF Circuits and Systems for Emerging Applications	2A9 - Bioelectromagnetics	2P9 - Time and Frequency Domain Modeling Techniques for Waveguides and Cables
ROOM J	1A10 - Advances in Optical Networking	1P10 - Chiral and Nonlinear Metasurfaces	2A10 - Electromagnetic Scattering by Random Media and Rough Surfaces	2P10a - Wireless Power Transmission and Harvesting 2P10b - Electromagnetic Energy
ROOM K	1A11 - Casimir Effect and Heat Transfer 1	1P11 - Casimir Effect and Heat Transfer 2	2A11 - Casimir Effect and Heat Transfer 3	2P11 - Casimir Effect and Heat Transfer 4
ROOM L	1A12 - Nanophotonics Light-trapping and Photodetection: Parts I and II	1P12 - Design and Simulation of Electromagnetic and Optical Devices	2A12a - Novel Frequency Selective Structures	2P12 - Small Antenna Design, Analysis and Miniaturization Techniques
ROOM M	1A13 - Solid-state Quantum Photonics 1	1P13a - Solid-state Quantum Photonics 2 1P13b - High-capacity Optical Communication Systems, Algorithms, Components 1	2A13a - High-capacity Optical Communication Systems, Algorithms, Components 2 2A13b - Near-field Optics: Light-matter Interaction Inside a Wavelength Volume 1	2P13a - Near-field Optics: Light-matter Interaction Inside a Wavelength Volume 2 2P13b - Technologies for On-chip Optical Networking
ROOM N	1A14 - PT Symmetry, Reciprocity, Nonlinear Phenomena	1P14a - Silicon Photonic Integration and Devices for Optical Communications and Interconnects 1P14b - Nonlinear Optics: Novel Phenomena, Materials and Applications 1	2A14 - Nonlinear Optics: Novel Phenomena, Materials and Applications 2	2P14 - Optical Microcavities and Waveguides 1
ROOM O		1P15a - Oral Presentations for Best Student Paper Awards - -- Optics and Photonics 1P15b - Oral Presentations for Best Student Paper Awards - -- Antennas and Microwave Technologies	2A15a - Oral Presentations for Best Student Paper Awards - -- SC1: CEM, EMC, Scattering & EM Theory	
ROOM Poster Area	1A0 - Poster Session 1	1P0 - Poster Session 2	2A0 - Poster Session 3	2P0 - Poster Session 4

	WEDNESDAY AM 8:00 July 8	WEDNESDAY PM 13:00 July 8	THURSDAY AM 8:00 July 9	THURSDAY PM 13:00 July 9
ROOM A	3A1 - Thermal and Acoustic Metamaterials		4A1 - Active, Tunable and Nonlinear Metamaterials 2	4P1 - Metamaterials and Plasmonics
ROOM B	3A2 - Manipulating and Control of Light-matter Interactions with 2D Materials and Meta-Materials	3P2 - Optical Properties of Resonant Dielectric and Plasmonic Nanostructures 2	4A2 - Laser Nanofabrication, Characterization and Physical Properties 2	4P2a - Coherent Optics, Laser Beam, Beam Propagation 4P2b - Optical Fiber, Sensing, Optical Devices
ROOM C	3A3 - Silicon Photonics --- Novel Materials, Hybrid Integration, Sensors and Nonlinear Devices	3P1 - Transformation Optics	4A3 - Extended/Unconventional Electromagnetic Theory, EHD/EMHD, and Electro-biology	4P3 - Plasmas, Composite Media, Waves and Media
ROOM D	3A4 - Numerical Modeling of Ultrashort Laser Pulse Propagation in Transparent Materials: Micro/nanomodification, Part 2	3P4 - Analysis and Simulation of Waves in Complex Media	4A4 - Advanced Photonic Systems for Datacommunications	4P4 - Remote Sensing, Radar, Imaging
ROOM E	3A5 - Electromagnetic Models and Applications in Remote Sensing	3P3a - Computational Techniques in Electromagnetics and Applications 2 3P3b - Computational Electromagnetics, Hybrid Methods	4A5 - Power Electronics 1	4P5a - Power Electronics 2 4P5b - EM Field Based Industrial Technologies
ROOM F	3A6 - Fiber Optic Sensors	3P8a - Novel EM Simulation, Components, and Design for the THz Region 3P8b - Microwave Photonics, THz Technology	4A6 - Electromagnetic Probing of Atmosphere and Ionosphere in Arctic Region 1	4P6 - RF and Wireless Communication
ROOM G	3A7a - Non-reciprocal and Topological Features in Photonic Systems 3A7b - Strong Light-matter Coupling and Strongly Interacting Photons 1	3P7 - Strong Light-matter Coupling and Strongly Interacting Photons 2	4A7 - Applications of EM Field in Biomedical Technique	4P7a - Microwave and Millimeter Wave Circuits and Devices, CAD
ROOM H	3A8a - Medical Electromagnetics, Biological Effects, Biomaging 3A8b - Microwave Photonics for Wireless Spectrum Management 2	3P8a - Active, Tunable and Nonlinear Metamaterials 1 3P8b - Nano-photonic Devices for Optical Interconnects and Optical Sensing	4A8 - Microstrip Antennas and Defected Ground Structure (DGS) Filters	4P8 - Antenna Theory and Radiation 2

	WEDNESDAY AM 8:00 July 8	WEDNESDAY PM 13:00 July 8	THURSDAY AM 8:00 July 9	THURSDAY PM 13:00 July 9
ROOM I	3A9 - Density Functional Theory and Its Applications to Nanomaterials	3P9a - Applied Electromagnetics for Smart Cities 3P9b - Electromagnetic Modeling Methods for EMC Problems	4A9a - Casimir and Other Quantum Effects	
ROOM J	3A10 - Inverse Scattering Methods and Applications for NDE	3P10a - Scattering, Diffraction, and Inverse Scattering 3P10b - Inverse Scattering, Imaging and Applications	4A10 - Resonators, Filters, Transmission Lines	
ROOM K	3A11 - Computational Techniques in Electromagnetics and Applications 1	3P11 - Optoelectronics and Photonics of Graphene and Two-dimensional Materials		
ROOM L	3A12 - Antenna-Channel Interactions and Wireless Propagation Channels	3P12 - Antennas and RF Devices Based on Superconductors and Other Advanced Materials		
ROOM M	3A13 - Disordered Photonics 1	3P13a - Disordered Photonics 2 3P13b - Laser Nanofabrication, Characterization and Physical Properties 1		
ROOM N	3A14 - Optical Microcavities and Waveguides 2	3P14 - Optical Microcavities and Waveguides 3		
ROOM O		3P5 - Photonic-Electronic Integration for Millimeter and Terahertz Wave Generation, Detection and Applications		
ROOM Poster Area	3A0 - Poster Session 5	3P0 - Poster Session 6		

參、心得與建議

- 一、 PIERS 國際研討會原本就已經涵蓋大部分電磁相關之研究主題，每年均有非常多創新的論文在此發表。非常高興可以參加 PIERS2015 國際研討會，除了在自己鑽研的領域與國際學者專家交流，更接觸到跨領域的創新發展趨勢，是一個相當值得參與的國際研討會。
- 二、 我們的論文所提出之天線為一結構簡單之平面天線，具備雙頻及寬頻之特性，容易製造，非常適用於現今及未來之無線通信系統。
- 三、 布拉格是一個浪漫且文化豐富的城市，所到之處都還保有古歐洲之特色，尤其是城市裡的建築，置身其中仿若回到從前。近年來，到布拉格旅遊的遊客越來越多，經濟的繁榮除了使物價上漲外，也使的質樸的古老城市多了吵雜與髒亂，迷人的特色日漸流失。初到布拉格感到最特別的是公車的計價方式，不同於一般以里程計價，布拉格的公車是以時間計價，買票時必須預估搭乘的時間，進出車站或上下公車並沒有查驗車票，只是偶而會有查票人員查驗你的車票是否還在有效時間內，若超過時間則有蠻重的罰款。此種方式若在台灣，可能常常會有未購票的乘客吧!
- 四、 本次研討會的地點位在 **Prague 4** 區域，是屬於布拉格的較外圍地區，附近區域建築和傳統布拉格市區完全不同，倒是和國內的工業區或科學園區非常接近，也看到一些跨國公司設廠。顯然，除了文化特色所發展之觀光產業外，捷克也開始發展工業，相信也會很快的進步。只是，文化與工業如何取捨，這不只是捷克人的課題，也應是全人類的重要議題吧!
- 五、 國內電磁相關研究，無論是理論或實務方面均有雄厚的基礎，前年也承辦 PIERS 2013 in Taipei。建議政府及國內產業可以繼續給予支持，讓國內的相關研究可以繼續發揚光大。

附件：

論文摘要

Dual-band Microstrip Antenna with Defected Ground Structure for WLAN Application

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Abstract— In recent years, more and more attention is paid in antenna design with multi-band operation for modern wireless communication systems. Therefore, in this paper, we present a novel compact printed antenna with dual strips and a defected ground structure (DGS), as shown in Figure 1, for dual-band operation. By folding and loading the twin strips, and defecting the ground plane of the antenna, multi-mode resonance with dual broad bandwidths can be excited. To verify the simulation results obtained from the CST electromagnetic simulator, the prototype of the proposed antenna was constructed and experimentally investigated. As shown in Figure 2, the measured bandwidths are 500 MHz (2.28–2.78 GHz) and 1.37 GHz (5.14–6.35 GHz) for the lower and upper bands, respectively, which agree well with the simulation. The experimentally obtained average gains across the two operating bands are 1.5 and 2 dBi, respectively, with typical monopole-like radiation patterns. The proposed antenna with a compact size of only $25 \times 25 \text{ mm}^2$ sufficiently covers performance requirement of the 2.4/5.2/5.8 GHz WLAN operation system. The proposed antenna with properties of simple and planar structure, dual and wide bandwidth, and easy fabrication can be effectively used in the upcoming generation of wireless communication systems.

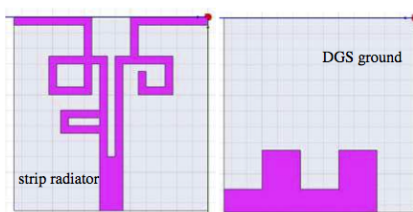


Figure 1: Configuration of proposed dual-band planar strip antenna for WLAN operation.

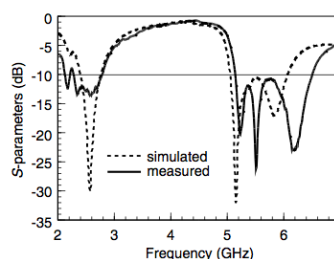


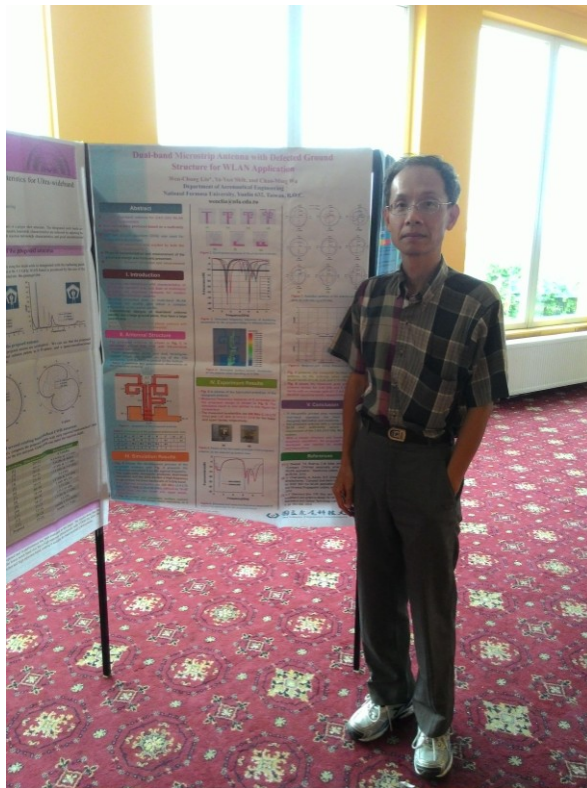
Figure 2: Measured S values for the proposed dual-band planar strip antenna.

ACKNOWLEDGMENT

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研討會會場



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