

A short course on

# Short Range Radio Propagation : Theory, Models and Applications

# Introduction to the Course

Radio propagation related topics have been paid more attention recently in the context of 5G from both Academia and Industry. European School of Antennas (ESoA) and Tongji University will jointly organize a short course on characterization of short range radio propagation from Oct. 9th to 12th, 2017, Shanghai, China.

The course, held for the first time in China, systematically introduces theories and practices of wave propagation and is tailored for audiences from both industries and academia. The latest advances of worldwide research in propagation measurement and modeling are discussed during the course and will give enlightening thoughts to researchers and engineers. Meanwhile the course, lectured by five professors highly renowned in their respective fields, can significantly strengthen the connections between European universities, research institutes, Chinese universities and companies.

A formal certificate of completing the course will be issued by ESoA at the end of the course. Graduate students in Master and doctoral levels, as well as R&D engineers from industry, researchers from academia are warmly welcome.

# Welcome



**Dates:**

**9th to 12th October 2017**

**Location:**

**Room 309, Zhixin Guan,  
Cao'an Road 4800, Tongji University,  
Jiading District, 201804, Shanghai**

**Fees:**

- **440 € (or 3500 ¥) for university students (including full time master or PhD students)**
- **880 € (or 6900 ¥) for any other participants**
- **Fees include lecture fee, coffee breaks, lunches and lecture materials**

For more details, please contact

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Prof. Yin 15000600400 [yinxuefeng@tongji.edu.cn](mailto:yinxuefeng@tongji.edu.cn)

To sign up, please send your name+e-

mail+university/ organization to [esoa\\_sh@163.com](mailto:esoa_sh@163.com)

**in Shanghai, China**

**October 9th - 12th, 2017**

Propagation  
**Channel  
Characterization**

传播信道特性

信号监测

毫米波

频谱共享

NB-IoT

European School  
of Antennas



同濟大學  
TONGJI UNIVERSITY

# Schedules of the Course

## Oct. 9th 2017 Monday

8:30 -9:30	Welcome, Introduction, Overview on radio channel modelling	Prof. Yin (TJU)
9:30-10:30	Fundamentals of propagation & scattering I	Prof. Brennan (DCU)
10:30-11:00	Coffee break	
11:00-12:00	Fundamentals of propagation & scattering II	
12:00-13:00	Full wave techniques for wave scattering computation I	
13:00-14:00	Lunch	
14:00-15:00	Full wave techniques for wave scattering computation II	
15:00-16:30	Geometrical theory of propagation I	Prof. Esposti (Unibo)
16:30-17:00	Coffee break	
17:00-18:00	Exercises	Prof. Brennan

## Oct. 10th 2017 Tuesday

8:30 -10:30	Geometrical theory of propagation II	Prof. Esposti
10:30-11:00	Coffee break	
11:00-13:00	Implementation of a ray based prediction tool	
13:00-14:00	Lunch	
14:00-16:30	Speed up techniques for RT prediction	
16:30-17:00	Coffee break	
17:00-18:00	Exercise	

## Oct. 11th 2017 Wednesday

8:30 -10:30	Multipath propagation	Prof. Cheng (PKU)
10:30-11:00	Coffee break	
11:00-13:00	Vehicular and UAV channel modelling	
13:00-14:00	Lunch	
14:00-15:00	MIMO channel sounding techniques	Prof. Yin
15:00-16:30	Channel parameter estimation techniques and their performances	
16:30-17:00	Coffee break	
17:00-18:00	Exercise	

## Oct. 12th 2017 Thursday

8:30 -10:30	Terahertz propagation I	Prof. Kuerner (TUBS)
10:30-11:00	Coffee break	
11:00-13:00	Terahertz propagation II	
13:00-14:00	Lunch	
14:00-15:30	Final exam	

# Introduction of the Lecturers

**Thomas Kürner** received his Dipl.-Ing. degree in Electrical Engineering in 1990, and his Dr.-Ing. degree in 1993, both from University of Karlsruhe (Germany). Since 2003 he is Full University Professor for Mobile Radio Systems at the Technische Universität Braunschweig (TUBS). His working areas are indoor channel characterization and system simulations for high-speed short-range



communication system, propagation, traffic and mobility models for automatic planning and self-organization of mobile radio networks, vehicle-to-x-communications as well as accuracy of satellite navigation systems. In 2012 he was a guest lecturer at Dublin City University within the Telecommunications Graduate Initiative in Ireland. He has actively contributed to the channel modelling document supporting the standardization of IEEE 802.11ad. Currently he is a voting member of IEEE 802.15 and is chairing the IEEE 802.15 IG THz and the IEEE 802.15.3d TG 100G. Prof. Kürner is a member of the Board of Directors of the European Association on Antennas and Propagation (EurAAP) and from 2012 to 2017. Since 2008 he is Associate Editor of IEEE Transactions on Vehicular Technology and since 2017 also Associate Editor of IEEE Antennas and Propagation. He is a Senior Member of IEEE and an elected member of URSI Commission F.

**Xuefeng Yin** received his Ph.D. in wireless communications from Aalborg University, Denmark in 2006. In 2008, he joined the college of electronics and information engineering Tongji University (TJU), Shanghai, China. He became a full professor in 2016 and served as the vice dean for the college since then. His research interests include high-resolution parameter estimation for



propagation channels, measurement-based channel characterization and stochastic modelling for 5G wireless communications, channel simulation based on random graph models, radar signal processing and target recognition. He has published about 100 technical papers and co-authored the book "Propagation channel characterization, parameter estimation and modeling for wireless communications" published by John Wiley and Sons IEEE Edition in 2016.

**Xiang Cheng** received the PhD degree from Heriot-Watt University and the University of Edinburgh, Edinburgh, U.K., in 2009. He has been with Peking University (PKU) since 2010, first as a Lecturer, and then as an Associate Professor since 2012. His current research interests include mobile propagation channel modeling, next generation mobile cellular systems, intelligent transportation systems, and hardware prototype development. He has published more than 120 research papers in journals and conference proceedings with more than 1860 citations in Google Scholar.

**Vittorio Degli-Esposti** received the 'Laurea' degree (with Honors) and the Ph.D. degree in Electronic Engineering from the University of Bologna, Italy, in 1989 and in 1994, respectively. Since November 1994 he has been with the Department of Electrical Engineering (DEI) of the University of Bologna (Unibo), where he is now Associate Professor and teaches courses on Electromagnetic, Radio Propagation and Wireless



Systems. He is co-organizer and lecturer of the biennial PhD Courses "Short range radio propagation: theory, models and future applications" and "Large Scale Radio Propagation" of the European School of Antennas. He participated in several European projects including European Networks of Excellence NEWCOM and NEWCOM++ the 7th FP IP European Project ALPHA and others. He is author or co-author of more than 110 peer-reviewed technical papers in the fields of applied electromagnetic, radio propagation and wireless systems. He has been Vice-Chair of EuCAP 2010-2011 and Short-Courses and Workshops Chair of EuCAP 2015. He has been an elected member of the Radio Propagation Board of the European Association on Antennas and Propagation (EuRAAP) from 2013 to 2015. He is Associate Editor of the scientific Journal "IEEE Access" and Senior Member of the IEEE.

**Conor Brennan** received his PhD in 1998 from Trinity College Dublin (TCD), and spent several years as a post-doctoral researcher with the TCD wave scattering group before joining Dublin City University (DCU) as a lecturer in 2003 and becoming a senior lecturer in 2013. His primary research area is in computational methods for electromagnetic wave propagation and scattering,



and applying such research to associated problems such as indoor user location and tracking, energy efficient wireless communications and etc. He has authored or co-authored over 100 peer-reviewed publications in international conference proceedings and international journals. He has served on numerous technical program committees, including most recently as convened session chair of EuCAP17. Dr. Brennan serves on the Royal Irish Academy Committee on Engineering and Computer Science.

