

**Sino-Canada Joint Workshop on Information Engineering**  
**Thursday October 15<sup>th</sup> – Friday October 16<sup>th</sup>**  
**1-414 Dianxin Building, SJTU**

**Sponsored by**  
**Department of Electronic Engineering, SJTU**  
**SYTACom Research Center, Québec**

**Thursday October 15<sup>th</sup>**

Session Chairs: *Yikai Su and Christine Tremblay*

09:30-10:00 **Welcome and introduction**

*By Jianping Chen, SJTU*

10:00-10:30 **Presentation of delegation and purpose of workshop**

*By Fabrice Labeau, McGill*

10:30-11:00 **Recent Advances of video coding and a learning-based solution**

*By Hongkai Xiong, SJTU*

11:00-11:30 **Error resilient transmission: theoretical and practical approaches**

*By Fabrice Labeau, McGill*

11:30-12:00 **Wireless two-way relaying: performance limits and physical layer network coding**

*By Meixia Tao, SJTU*

12:00-14:00 **Lunch time with EE**

Session Chairs: *Hongkai Xiong and Mai Vu*

14:00-14:30 **Channel estimation methods for multiple antenna wireless system**

*By Ioannis Psaromiligkos, McGill*

14:30-15:00 **Performance analysis for multicast cell with opportunistically network coded relay**

*By Wen Chen, SJTU*

15:00-15:30 **Whole-network available bandwidth estimation**

*By Michael Rabbat, McGill*

15:30-16:00 **Convergence of RoF and baseband optical transmissions**

*By Yikai Su, SJTU*

16:00-16:30 **Advanced optical network architectures**

*By Christine Tremblay, École de Technologie Supérieure*

16:30-17:00 **Mobility increases the connectivity of K-hop clustered wireless networks**

*By Xinbing Wang, SJTU*

**Friday October 16<sup>th</sup>**

Session Chairs: *Xinbing Wang and Michael Rabbat*

9:30-10:00 **Cognitive sensing with side information**

*By Mai Vu, McGill*

10:00-10:30 **A novel spectrum sensing technique in cognitive radio based on stochastic resonance**

*By Chen He and Di He, SJTU*

10:30-12:00 **Summary**

12:00-14:00 **Lunch time with SEIEE**

# Sino-Canada Joint Workshop On Information Engineering

**Wen Chen, Professor**, Director-Institute of Signal Processing and Systems  
Department of Electronic Engineering, Shanghai Jiaotong University  
<http://wnt.sjtu.edu.cn/>



Wen Chen received his BS and MS from Wuhan University in 1990 and 1993 respectively, and his PhD from University of Electro-Communications, Tokyo, Japan in 1999. He was a researcher of Japan Society for the Promotion of Sciences (JSPS) from 1999 through 2001. In 2001, he joined University of Alberta, Canada, starting as a post-doctoral fellow in Information Research Lab and continuing as a research associate in Department of Electrical and Computer Engineering. Since 2006, he has been a full professor in Department of Electronic Engineering, Shanghai Jiaotong University, China, where he is also the director of Institute for

Signal Processing and Systems. Dr. Chen was awarded the Ariyama Memorial Research Prize in 1997, the PIMS Post-Doctoral Fellowship in 2001. He received the honors of "New Century Excellent Scholar in China" in 2006 and "the Pujiang Excellent Scholar in Shanghai" in 2007. He is elected to the vice general secretary of Shanghai Institute of Electronics in 2008. He is in the editorial board of the International Journal of Wireless Communications and Networking, and serves Journal of Communications, Journal of Computers and EURASIP Journal on Wireless Communications and Networking as guest editors. He is the Technical Program Committee chair for IEEE-ICCSC2008, the General Conference Chair for IEEE-ICIS2009. He has published more than 60 papers in IEEE journals and conferences.

Possible presentation topics:

- Wireless Cooperative Network Coding

**Chen He, Professor**, Associate Director-Institute of Modern Communications  
Department of Electronic Engineering, Shanghai Jiaotong University  
<http://ee.sjtu.edu.cn/po/Class-web/ChenHe/>



Chen He received the BS and MS from Southeast University in 1982 and 1985 respectively. He received the PhD from Tokushima University in 1994. Then he joined Shanghai Jiaotong University in 1996. In 1999-2000, he visited the National Communication Institute of Japan. Recently he has finished many national projects, such as NSF China and national 863 projects. He has published more than 250 papers, among which 150 papers are SCI, EI and ISTP indexed. He holds 14 patents with 16 in pending. Dr. He is the chair of IEEE CAS chapter, Shanghai.

Possible presentation topics:

- Wireless Communication Theory
- Wireless Sensor Networks

**Yikai Su, Professor**, Associate Chair-International Communications  
Department of Electronic Engineering, Shanghai Jiaotong University  
[http://otip.sjtu.edu.cn/members/yikaisu\\_english/](http://otip.sjtu.edu.cn/members/yikaisu_english/)



Yikai Su (M'01-SM'07) received the B.S. degree from the Hefei University of Technology, China in 1991, the M.S. degree from the Beijing University of Aeronautics and Astronautics, China in 1994, and the Ph.D. degree in EE from Northwestern University, Evanston, IL, USA in 2001. He was with Crawford Hill Laboratory of Bell Laboratories for three years before he joined the Shanghai Jiao Tong University (SJTU), Shanghai, China, as a Full Professor in 2004. He became the associate department chair of Electronic Engineering in 2006. He is the chair of the IEEE

ComSoc Shanghai chapter, and a faculty advisor of the SJTU OSA student chapter. His research areas cover modulation formats, optical signal processing in silicon nanophotonic devices and fibers, and display technologies. He has ~170 publications in international journals and conferences, including ~30 invited conference presentations, and 8 postdeadline papers. He holds 4 US patents with over 10 US or Chinese patents pending.

Possible presentation topics:

- Optical information processing in nano-photonic devices
- Optical communication systems
- Display technologies

**Meixia Tao, Associate Professor**-Institute of Wireless Communications

Department of Electronic Engineering, Shanghai Jiaotong University  
<http://iwct.sjtu.edu.cn/Personal/mxtao/>

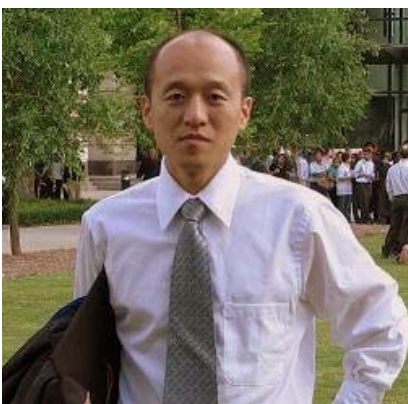


Dr. Tao received the B.S. degree in Electronic Engineering from Fudan University, Shanghai, China, in 1999, and the Ph.D. degree in Electrical and Electronic Engineering from Hong Kong University of Science & Technology (HKUST) in 2003. From Aug. 2003 to Aug. 2004, she was a Member of Professional Staff in the Wireless Access Group at Hong Kong Applied Science & Technology Research Institute Co. Ltd. (HK-ASTRI). From Aug. 2004 to Dec. 2007, she was with the Dept. of Electrical and Computer Engineering at National University of Singapore as an Assistant Professor. Since Jan. 2008, she joined the Department of Electronic Engineering at Shanghai Jiao Tong University, China, where she is currently an Associate Professor and PhD advisor. Dr. Tao is an Editor of IEEE Trans. on Wireless Communications and an Associate Editor of IEEE Communications Letters. She is currently serving as Symposium Co-Chair of ChinaCom'09 and Track Co-Chair of APCC'09. She was selected as Chen Guang Scholar of Shanghai in 2008 and Shanghai Pujiang Scholar in 2009. She received the IEEE ComSoC Asia-Pacific Outstanding Young Researcher Award in 2009.

Possible presentation topics:

- Cooperative Communications
- Wireless Resource Allocation

**Xinbing Wang, Associate Professor**-Institute of Wireless Communications  
Department of Electronic Engineering, Shanghai Jiaotong University  
<http://iwct.sjtu.edu.cn/Personal/xwang8/>



Xinbing Wang (M'06) received the B.S. degree (with honors) from the Department of Automation, Shanghai Jiaotong University, Shanghai, China, in 1998, and the M.S. degree from the Department of Computer Science and Technology, Tsinghua University, Beijing, China, in 2001. He received the Ph.D. degree, major in the Department of Electrical and Computer Engineering, minor in the Department of Mathematics, North Carolina State University, Raleigh, in 2006. Currently, he is a faculty member in the Department of Electronic Engineering, Shanghai Jiaotong University, Shanghai, China. His research interests include resource allocation and management in mobile and wireless networks, TCP asymptotics analysis, wireless capacity, cross layer call

admission control, asymptotics analysis of hybrid systems, and congestion control over wireless ad hoc and sensor networks. Dr. Wang has been a member of the Technical Program Committees of several conferences including IEEE ICC 2007, IEEE Globecom 2007, IEEE WCNC 2007, IEEE ICCCN 2007 and IEEE IPCCC 2007. He is a member of the ACM.

Possible presentation topics:

- Cognitive Radio
- Network Coding

**Hongkai Xiong, Associate Professor**-Institute of Image Communications  
Department of Electronic Engineering, Shanghai Jiaotong University



Dr. Hongkai Xiong is presently an Associate Professor in the Department of Electronic Engineering, Shanghai Jiao Tong University (SJTU), where he is undertaking the research activities in the area of network-oriented image/video processing and communication. Since he received Ph. D degree in Communication and Information System from SJTU in 2003, he has been with the Institute of Image Communication & Information Processing and Department of Electronic Engineering, SJTU. From Dec. 2007 to Dec. 2008, Dr. Xiong was a Research Scholar with the Department of Electrical Engineering, Carnegie Mellon University (CMU), PA, USA. His research interest includes source coding/network information theory, signal processing, computer vision and graphics, and statistical machine learning. Under the grants from National Natural Science Foundation, he has been devoted to scalable video coding (SVC) in multimedia transmission, biomedical image processing, distributed video coding, learning-based image-video coding, and network coding. He has published over 60 international journal/conference papers. In SJTU, Dr. Xiong directs “Intelligent Video Modeling (IVM)” Lab and “Multimedia Communication” area in the Key Lab of Ministry of Education of China – “Intelligent Computing and Intelligent System” which is also co-granted by Microsoft Research. Dr. Xiong has served for various IEEE conferences as technical program committee (TPC) member. Also, he acts as member of Technical Committee on Signal Processing of Shanghai Institute of Electronics.

Possible presentation topics:

- Source Coding
- Computer Vision and Graphics
- Statistical Machine Learning

**Fabrice Labeau**, Associate Professor, Associate Dean – Graduate and Postdoctoral Studies, Associate Director – Centre for Advanced Systems and Technologies in Communications (SYTACom)

Department of Electrical and Computer Engineering, McGill University

<http://people.mcgill.ca/fabrice.labeau/>



Fabrice Labeau is an Associate Professor in the Electrical and Computer Engineering Department of McGill University, where he also is the Associate Chair for Graduate Studies. His research interests are in the area of signal processing of transmission, including error-resilient compression, multirate signal processing, adaptive transceivers, as well as applications of communications systems in the healthcare context. He has published over 60 papers in refereed journals and conferences on these topics. As associate director for operations, he also manages the day-to-day operation of the SYTACom center, an interuniversity center grouping more than 50 researchers and 350 graduate students from 8 universities in the Canadian province of Québec. He is a senior member of the IEEE, and has received in 2008 the IEEE Vehicular Technology Society Outstanding Service award.

Possible presentation topics:

- Communications technology enhancements for the healthcare sector.
- Error resilient transmission: theoretical and practical approaches.

**Michael Rabbat**, Assistant Professor

Department of Electrical and Computer Engineering, McGill University

<http://www.tsp.ece.mcgill.ca/Networks/people.html>



Michael Rabbat earned the B.S. from the University of Illinois at Urbana-Champaign (2001), the M.S. from Rice University (2003), and the Ph.D. from the University of Wisconsin-Madison (2006), all in Electrical Engineering. In January, 2007, he joined McGill University as an Assistant Professor in the Department of Electrical and Computer Engineering. He teaches and conducts research in the areas of networking, statistical signal processing, and machine learning. His current research is focused on distributed information processing in sensor networks, network monitoring, and inferring the structure of networks from incomplete data. He also serves as the liaison to the SYTACom student body organization and helps coordinate the SYTACom Interdisciplinary Student Seminar.

Possible presentation topics:

- Whole-Network Available Bandwidth Estimation
- Gossip Algorithms for Distributed Signal Processing

**Mai Vu**, Assistant Professor

Department of Electrical and Computer Engineering, McGill University

<http://www.ece.mcgill.ca/~mvu5/>



Mai Vu is an assistant professor in Electrical and Computer Engineering at McGill University. Before that, she was a lecturer and researcher at Harvard School of Engineering and Applied Sciences. She received a PhD degree in Electrical Engineering from Stanford University in 2006. Her research interests span the areas of wireless communications, cognitive networks, signal processing, information theory, and convex optimization. She has been working on precoding techniques for exploiting partial channel knowledge at the transmitter in MIMO wireless systems. Currently, she conducts research in cognitive wireless networks, studying the fundamental limits and designing distributed processing algorithms.

Possible presentation topics:

- Cognitive network: scaling law and exclusive region
- Cognitive sensing with side information

**Ioannis Psaromiligkos**, Associate Professor

Department of Electrical and Computer Engineering, McGill University

<http://www.ece.mcgill.ca/~ipsaro1/>

Ioannis Psaromiligkos received the Diploma degree in computer engineering and science from the University of Patras, Patras, Greece in 1995, and the M.S. and Ph.D. degrees in electrical engineering from the State University of New York at Buffalo in 1997 and 2001, respectively. In



September 2001, he joined the Department of Electrical and Computer Engineering at McGill University where he is an Associate Professor. He is currently an associate editor for IEEE Signal Processing Letters and the EURASIP Journal on Advances on Signal Processing. He has also served as an associate editor for IEEE Communications Letters.

His research interests are in the areas of adaptive signal processing, statistical detection and estimation, and wireless multiple access communications.

Possible presentation topics:

- Channel estimation methods for multiple antenna wireless system
- A unified statistical characterization of global navigation signals with applications to time delay estimation

**Christine Tremblay**, Professor

Department of Electrical Engineering, École de Technologie Supérieure

[http://www.etsmtl.ca/zone1/bottins/Page\\_details.asp?Numero=2302](http://www.etsmtl.ca/zone1/bottins/Page_details.asp?Numero=2302)



Christine Tremblay is a Professor in the Electrical Engineering Department of the École de Technologie Supérieure (ÉTS) since 2004 where she set up the *Laboratoire de technologies de réseaux*, a high-speed WDM physical layer testbed for evaluating advanced optical transmission technologies. Her research interests are in the area of optical communication systems and networks, including the exploration of novel optical network architectures and fiber optic measurements for optical networks, as well as physical layer monitoring techniques for passive optical networks (PON). Between 1998 and 2004, she held senior R&D and technology management positions for several organizations. As Engineering Manager at EXFO and Director of Engineering at Roctest, she was responsible for the development of fiber optic test instruments and systems for the telecommunication and geotechnical markets, respectively. She also served as product manager at Nortel Networks for high-speed wavelength division multiplexing (WDM) systems. She was a Research Scientist with the National Optics Institute (INO) from 1991 to 1998 where she conducted research on guided wave optical devices for communication and sensing applications. She is a member of the Canadian Institute for Photonics Innovation (CIPI), the Center for Advanced Systems and Communications (SYTACom), the Optical Society of America (OSA) and the IEEE Photonics Society.

Possible presentation topics:

- Advanced optical network architectures
- Optical fiber testing for 40G/100G networks
- High-speed WDM physical layer testbed for evaluating advanced optical transmission technologies