

SMPTE

Chapitre Montréal / Québec / Ottawa
Avis de Présentation de Soirée

Saison 2020 / 2021

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Date: **Jeu, 11 mars 2021**
Heure: **19:00**
Endroit: **En direct sur Facebook dans votre cuisine, salon, bureau...**
Organisé: Le Comité SMPTE Montréal en partenariat avec IEEE Montréal
Commandité: SMPTE Montréal
Langue: Anglais

Sujets:

- Zero Guard Interval for ATSC 3.0 Single Frequency Networks
- Status report on HD Radio evolution in the US
- Audio dynamic range management in a Broadcast to home context

IMPORTANT: Cette soirée est offerte à tous et présentée en streaming sur notre page Facebook (<https://www.facebook.com/SMPTEMTL/>).

Votre comité SMPTE-MTL est fier de se joindre à l'IEEE Montréal pour vous présenter une soirée portant sur plusieurs sujets d'intérêt:

- A Novel Coordinated Multipoint Scheme with Zero Guard Interval for ATSC 3.0 Single Frequency Networks
- Status report on HD Radio evolution in the US, David Layer, vice president, advanced engineering in NAB Technology department
- Audio dynamic range management in a Broadcast to home context

Toutes les présentations seront données en anglais et les questions pourront être posées en français ou en anglais.

La soirée sera animée sur Facebook où vous serez invité à interagir avec nous, poser vos questions.

Horaire de la soirée :

19:00 – 19:05: Mot de bienvenue et d'ouverture, Guy Bouchard, Président IEEE-BTS – Chapitre de Montréal

19:05 – 19:35: Présentation 1: A Novel Coordinated Multipoint Scheme with Zero Guard Interval for ATSC 3.0 Single Frequency Networks – Nazli Kahnbeigi, Interdigitales

Advanced Television Systems Committee (ATSC) has issued ATSC 3.0 as the standard for the next-generation of Digital Terrestrial Television (DTT) broadcasting. ATSC 3.0 introduces several new features including Layered Division Multiplexing (LDM) that is implemented along with a wide range of modulation formats and error correcting code rates. ATSC 3.0 supports the legacy Single Frequency Networks (SFN), where the Guard Interval (GI) is considered to overcome the multipath as well as the asynchronous reception from different transmitters. Considering the huge distances between the DTT broadcasters, the GI overhead could be comparable to the data size, making the control/data ratio unfavorable. This work proposes a novel formation of the channel matrix that jointly includes the asynchronous channel's cross correlations for further joint detection of the signals at the receiver to the purpose of increasing the spectral efficiency while avoiding hectic guard intervals or directional antennas. We investigate asynchronous reception of signals from multiple coordinated broadcasters in SFN with no GI. The capacity region is derived in an information theoretic framework, and an accurate mathematical channel model for the asynchronous SFN is proposed. We show that by exploiting the asynchronous channels' memory and correlation, the spectral efficiency can exceed that of the non-coordinating schemes, provided that the proper receiver is used. Analyzing the receivers, we show that while interference cancelation (IC) receiver is sensitive to asynchronous reception, the performance elevates in the iterative joint detection and decoding (IJDD) receiver. We use a low-complexity detection scheme minimizing the mean square error (MMSE) and adopt it to our asynchronous channel model. Our extensive simulations validate that the proposed cooperative scheme provides a considerable boost in the coverage and channel reliability, while increasing the spectral and power efficiency.

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19:35 – 20:30: Présentation 2: Status report on HD Radio evolution in the US, David Layer, vice president, advanced engineering in NAB Technology department - David Layer, NAB

This session will focus on radio technical work being supported by NAB in 2021. For radio, work being done by the National Radio Systems Committee (NRSC, co-sponsored by NAB and the Consumer Technology Association) as well as the NAB's own Radio Technology Committee, which has two active subgroups focusing on hybrid radio and next-gen HD Radio architecture, will be featured. Also included will be a short tour of the new NAB building including the new Technology Lab and Tech Showcase.

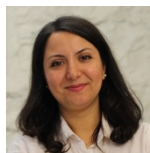
20:30 – 21:00: Présentation 3: Audio dynamic range management in a Broadcast to home context - Guy Bouchard, Télé-Québec

This paper is all about the shock between the audio we can produce in a broadcast facility and the audio a viewers can enjoy in its household environment, an RF like acoustic link budget will be drawn to address the audio processing that a broadcaster has to do in order to please the bulk of his target audience, In this process we will be revisiting the Pareto 80,20 rules in a occupied bandwidth to Issues context.

Biographies:

Présentateurs:

Nazli Kahnbeigi, Interdigitales



Nazli Khan Beigi earned her B.S. degree from Sharif University of Technology, Tehran, Iran, in 2003, the M.S. degree from Iran University of Science and Technology, Tehran, Iran, in 2005, and the Ph.D. from Concordia University, Montreal, Canada, in 2020, all in electrical engineering. Since 2018, she is with Interdigital Company, Montreal, Canada, as the senior engineer in the R&D Wireless and Networking Lab. Her current research interests lie in the area of wireless communications RAN and includes coding, information theory, broadcasting, MIMO, NOMA, and their applications in the future radio access technologies.

David Layer, NAB



David has been with NAB since 1995 focusing primarily on the radio technology and standards setting area. David's principal responsibilities include serving as a project manager for technology projects being conducted by PILOT (formerly NAB Labs), and as principal administrator of the NAB Radio Technology Committee, a group of technical executives from NAB member companies that advises NAB on technology development and technical regulatory matters. Currently, David is the chairman of the RadioDNS Steering Board and is the NAB representative to the RDS Forum. He is also vice-chair of the North American Broadcasters Association (NABA) Radio Committee. He is a senior member of the IEEE and a member of the Association of Federal Communications Consulting Engineers (AFCCE). Currently David is one of the BTS Distinguished Lecturers and has given lectures focusing on digital and hybrid radio to BTS chapters in Montreal, San Diego, Buenos Aires, Montevideo, Bilbao, Beijing, Shanghai, and Belgrade.

David was the recipient of Radio World's 2015 Excellence in Engineering Award and was recognized by Radio Ink Magazine in November 2010 as among the top ten best engineers in radio. In 2014 David received the Consumer Electronics Association Technology Leadership Award. The IEEE BTS awarded David the Matti Siukola Memorial Award for the Best Paper of both the 2014 and 2018 IEEE Broadcast Symposia.

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Guy Bouchard, Télé-Québec



Guy Bouchard is director, transmission systems at Télé-Québec. He is responsible for digital delivery infrastructure at Télé-Québec. During his 33 years with the CBC, Guy has worked in analog and digital television transmission and production systems, as well as satellite and terrestrial microwave communication systems. He holds a degree in telecommunications from the University du Québec. He is a board member of the IEEE Broadcast Technology Society AdCom. Guy has served the broadcast industry since 1979 with a special interest in digital communications systems. He has written and delivered papers on DTV, Satellite and MPEG Transport Technology for the NAB, CCBE, IEEE, Canadian Digital Television (CDTV), and the Society of Motion Picture and Television Engineers (SMPTE), As participant to the IEEE BTS Distinguished Lecturer program Guy delivered papers in Buenos Aires, Montevideo & Johannesburg

Animateur:

Guy Bouchard, Télé-Québec

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