

International Conference and Business Expo on

# Wireless Communication & Network

September 21-23, 2015 Baltimore, USA

## Photonic generation of millimeter wave signals for wireless applications

**Mehdi Shadaram**

The University of Texas at San Antonio, USA

Wireless transmission in the lower microwave band is congested by applications such as Wi-Fi, GSM, etc. Some other new wireless technologies (e.g., WiMAX) are still handled within the lower microwave regions (2–5 GHz). Therefore, unlicensed 60 GHz frequency band (57–64 GHz) and 70–94 GHz band have been considered in the last few years. In the United States, the 60 GHz band can be used for unlicensed short range data links. Propagation characteristics of the 60 GHz band like oxygen absorption and rain attenuation limit the range of communications systems which use this band. Also, geographical consideration is crucial for antenna Base Stations (BSs) installments. Because of large number of required BSs and the high throughput of each BS, deployment of an optical fiber backbone is necessary. Therefore, hybrid systems are considered to support the intense demand of high quality telecommunications services. Fiber backbone network is widely considered to support usage of unlicensed 60 GHz band. This network provides a broadband link between central office (CO) and BSs. This hybrid network can decrease the complexity and cost of the BSs by moving the routing, switching and processing functionalities to the CO. This way, the equipment cost can be shared among antenna BSs. Optical modulators such as Mach-Zehnder modulators (MZMs) can be utilized to generate optical millimeter wave signals. The lecture presents an overview of the photonic generation of millimeter wave signals for wireless applications. Different modulation methods are discussed and the performance analysis of transmission links is presented.

### Biography

Mehdi Shadaram is the Briscoe Distinguished Professor in the Department of Electrical and Computer Engineering and the Director of the Center for Excellence in Engineering Education at The University of Texas at San Antonio. His main area of research activity is in the broadband analog and digital fiber optic and wireless communications. He has published more than 120 articles in refereed journals and conference proceedings. He has been the General Chair, Session Chair, TPC Chair, and Panelist in several conferences. He is Senior Member of IEEE. He received his PhD in electrical engineering in 1984 from The University of Oklahoma.

[Mehdi.Shadaram@utsa.edu](mailto:Mehdi.Shadaram@utsa.edu)

### Notes: