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Dependable wireless communications for high-speed railway

High-Speed Railway (HSR) has brought much convenience for peoples' travelling. To ensure safe and reliable operation of HSR, maintaining a reliable bidirectional communication link between the train and the ground, dedicated mobile communication systems such as GSM for railway (GSM-R) and LTE for railway (LTE-R) play key roles. Moreover, rapid growth of future railway services and applications such as real-time high-definition (HD) video surveillance has aroused 1 GBps data transmission rate with 100 MHz bandwidth at least. Thus, higher frequency band such as mm-wave technique, the fifth generation (5G) technique and corresponding mobile communication network should be designed accordingly to provide high capacity and high data transmission rate for newly developed railway services and applications. This presentation talks about some key features and technical challenges on dependable wireless communications for high-speed railways.

Biography

Bo Ai received his Master's degree and PhD degree from Xidian University in China. He graduated from Tsinghua University with the honor of Excellent Postdoctoral Research Fellow at Tsinghua University in 2007. He works in State Key Lab of Rail Traffic Control and Safety at Beijing Jiaotong University as a full Professor and PhD candidate advisor. He is the Deputy Director of State Key Lab of Rail Traffic Control and Safety and the Deputy Director of Modern Telecommunication Institute. He is now working at Electrical Engineering Department, Stanford University as a Visiting Faculty.

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