**5G Key Technologies for Intelligent High-Speed Railway**

The 5th generation mobile communication technology (5G) is a hotspot of research and attention in the international academia and industry. Multi-scene, multi-target and multi-technology integration are the important characteristics of 5G, which are different from other generations of mobile communication systems. The international telecommunication union (ITU), the world wireless research forum (WWRF), China 5G Standard Promotion Group (IMT-2020), the European Union 5G Research Organization (NGMN) and METIS all regard high-speed railway or high-speed mobility as an important scenario of 5G. High-speed railway is one of the typical vertical application industries of 5G.

This report aims at the business and application requirements of future high-speed railway development, points out the necessity and scientific significance of applying 5G technology to the intelligent high-speed railway system, and the application of 5G technology in the future high-speed railway communication systems are discussed from the aspects of high-speed railway service model, network architecture, millimeter-wave communication, large-scale antenna array, beam management, ultra-reliable low time delay, mobile edge calculation, network slicing, etc.

**Bio:**

Prof. Bo Ai is now working as a full Professor and Ph.D. supervisor at Beijing Jiaotong University, where he is a deputy director of State Key Lab. of Rail Traffic Control and Safety, and a deputy director of Research Institute of Modern Telecommunications. He is one of the main responsible people for Beijing "Urban rail operation control system" International Science and Technology Cooperation Base, and the backbone member of the Innovative Engineering Based jointly granted by Chinese Ministry of Education and the State Administration of Foreign Experts Affairs. He was a visiting professor at EE department, Standard University during March and September, 2015. During his visiting period, he has been invited by Stanford International Developing Center, UC Berkeley, University of South California, Harvard, University of Maryland, Georgia Tech. for academic presentations. He has authored 6 books and published over 300 scientific research papers in his research area. He has hold 26 invention patents. He is serving as an associate editor for IEEE transactions on Consumer Electronics and an editorial member of Wireless Personal Communications. He has been notified by Council of Canadian Academies (CCA) that, based on Scopus database, Prof. Ai Bo has been listed as one of the Top 1% authors in his field all over the world. Prof. Ai Bo has also been Feature Interviewed by IET electronics Letters. Recently, he has coauthored a book with European Union and North American scholars invited by Wiley John & Sons for a 5G book: Fundamentals for 5G Mobile Networks. Prof. Bo Ai was elected as IEEE fellow for contributions to channel modeling and wireless communications in high-speed railways.