

# Chinese High Speed Railway Train Control System

## 中國高速鐵路列車運行控制系統

**Prof C L WANG**

Southwest Jiaotong University  
People Republic of China

### Abstract

The topic of the speech is Chinese High Speed Railway Train Control System. This article introduces 4 aspects from Chinese High Speed Railway system and general situation of Chinese train control system, CTCS-2, CTCS-3 train control system. In recent years, with the rapid development of Chinese high speed railway, there have been the Beijing-Tianjin inter-city railway, Wuhan-Guangzhou, Zhengzhou-Xian, Shanghai-Ningbo, Shanghai-Hangzhou etc high-speed passenger dedicated lines in operation. The speed of train is up to 350km/h, which is asking for much higher demand to make sure the operation security and improve the operation efficiency. Chinese Ministry of Railway (MOR) determined to build Chinese Train Control System (CTCS). Among them, the CTCS-2 has already been applied in 200km/h-250km/h railway lines, the follow-up interval of EMU has been reduced to 5 minutes. The speed of New Passenger Dedicated Line is up to 300km/h-350km/h, adopting CTCS-3 which based on the GSM-R platform of wireless communication. The application of CTCS successfully guarantees the operation security and improve the operation efficiency.

### 摘要

本次演講的主題是中國高速鐵路列車運行控制系統。文中分別對中國高速鐵路、中國列車運行控制系統的總體概況、及CTCS-2、CTCS-3級列控系統這四個方面逐一進行介紹。近幾年中國高速鐵路到了迅猛發展的時期，先後開通了京津城際鐵路、武廣、鄭西、滬甯、滬杭等高速客運專線，列車速度達到了350km/h，這一速度對保障列車的行駛安全、提高列車的運行效率等提出了更高的要求，鐵道部確定構建

了中國鐵路列車運行控制系統技術體系（CTCS：Chinese Train Control System），其中CTCS-2級列控系統已用於200-250km/h線路，動車組的追蹤間隔縮短至5分鐘，而新建成的高速客運專線速度達到了300-350km/h線路，已是運用了基於無線通信平臺的CTCS-3級列控系統。CTCS系統的應用成功保障了列車的運行安全、提高列車行車效率。

### Biography

Professor Wang, who was born in 1954, serves in the Information Science and Technology School of Southwest Jiaotong University, major in Automation (the direction of traffic information engineering and control). His main research field is Train Control System, Railway Communication, Railway Computer Application. He is one of the experts in national 863 maglev train control group, and also participates academic exchange and cooperation in science and technology projects in Japan in 1998 and 2005.

Professor Wang has implemented 3 projects from 863 Hi-tech Project: Partitioned data transmission analog terminal in Maglev Train Operation Control, Protection network for partitioned data in Maglev Train Operation Control, the safety of Maglev Train Operation Control System. One project from National Natural Science Foundation: Key technology of ATP in train. One project from state science and technology support program: The applicability of High Speed Rail Signal Control Technology to the Maglev system. He has also published more than 30 scientific papers in Railway Computer Application, Railway Signaling & Communication, Journal of Southwest Jiaotong University and others.