

Broadband Planar Antennas and Aperture-Shared Arrays for Base Stations

by

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Abstract

In this talk, a simple method for the design of a broadband planar base-station antenna is presented. Only three geometric parameters are involved in the design procedure, including the width of a square patch, a trimming angle on the square, and the height of the patch above the ground plane. The bandwidths of the broadband planar antenna are enhanced to 67% by etching four slots on the square patch and to 76% by employing two parasitic disks above and under the square patch, respectively. A compact broadband dual-polarized antenna is proposed for 5G NR base stations. The total antenna size is $0.26\lambda_L \times 0.26\lambda_L \times 0.18\lambda_L$ and the bandwidth achieved is about 75% (0.69–1.52 GHz). A low-profile broadband dual-polarized antenna is realized with an antenna height of about $0.15\lambda_L$ and a bandwidth of about 76.5% (2.3–5.15 GHz). A dual-band aperture-shared array, a dual-broadband aperture-shared array, and a tri-band aperture-shared array are developed with meta-surfaces for 2G/3G/4G and 5G-NR base-station applications.

Biography



RongLin Li received the B.S. degree in electrical engineering from Xi'an Jiaotong University, China, in 1983, and the M.S. and Ph.D. degrees in electrical engineering from Chongqing University, in 1990 and 1994, respectively. From 1983 to 1987, he worked as an Assistant Electrical Engineer in Yunnan Electric Power Research Institute. From 1994 to 1996, he was a Postdoctoral Research Fellow in Zhejiang University, China. In 1997, he visited Hosei University, Japan, as an HIF (Hosei International Fund) Research Fellow. In 1998, he became a Professor in Zhejiang University. In 1999, he visited the University of Utah, USA, as a Research Associate. In 2000, he worked as a Research Fellow at the Queen's University of Belfast, UK. Since 2001, he has been a Research Scientist with Georgia Institute of Technology, USA. He is now a Professor in the South China University of Technology.

Dr. Li has published more than 100 papers in refereed Journals and Conference Proceedings, and 3 book chapters. He currently serves as an Editor of the ETRI Journal and a reviewer for a number of international journals, including IEEE Transactions on Antennas and Propagation, IEEE Antennas and Wireless Propagation Letters, IEEE Microwave and Wireless Components Letters, IET Microwave, Antennas & Propagation, Progress in Electromagnetic Research, Journal of Electromagnetic Waves and Applications, and International Journal of Wireless Personal Communications. He was a member of the Technical Program

Committee for IEEE-IMS 2008-2012 Symposia and a session chair for several IEEE-APS Symposia. He was the recipient of the 2009 Georgia Tech-ECE Research Spotlight Award and the Best Editor Award from ETRI in 2014. His current research interests include new design techniques for antennas in mobile and satellite communication systems, phased arrays and smart antennas for radar applications, wireless sensors and RFID technology, electromagnetics, and information theory.

~~~ All are welcome ~~~

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