Abstracts

System aspects of smart-antenna technology in cellular wireless communications-an overview

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In this paper, we surveyed the three main system aspects of smart-antenna (SA) technology in wireless communications, i.e., SA receiver, wireless network control, and planning with SAs. A classification of SA receivers and their algorithms is given in order to simplify orientation in a very large amount of structures and algorithms. We discuss system integration of SA receivers, taking into consideration expected propagation conditions, user mobility, and offered traffic. Several radio network planning and upgrading concepts associated with SAs are evaluated. We describe possible radio networks architectures when SAs are used at the mobiles, base stations, or at both ends. Radio network control functions with SAs at different layers are briefly examined. Existing experimental and commercially available SAs and their performance are surveyed.

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