Distributed Space-Time Block Coding Scheme in In-Band Full Duplex Relaying Networks

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***Abstract*—This paper proposes a cooperative scheme for in-band full duplex (IFD) in a one-way two-hop relaying system. The proposed scheme realizes collocated space-time block coding by applying both of the superposition coding at the source and the IFD mode at the relay. The achievable rate of the proposed scheme is derived for fixed relay channel gains and compared to those of the upper-bound IFD as well as existing IFD relaying schemes. Our achievable-rate results elucidate that our scheme is close to the upper-bound IFD than any other scheme.**

***Keyword*—In-band full-duplex, relaying, space-time block coding**

Kapseok Chang (SM'99–F'05) received his M.S. (1999) and Ph.D. (2005) degrees from KAIST, Daejeon, Korea. He has been with ETRI as a full-time senior researcher since July 2005. Additionally, since September 2009, he has been an associate professor at the University of Science and Technology, Daejeon, Korea. From March 2011 to February 2013, he was with the School of Engineering Science, Simon Fraser University, Burnaby, BC, Canada as a visiting professor. During his Ph.D. study, he won the Brain Korea Scholarship. From ETRI in 2007 and IEEE 802.11ad in 2012, he received the Best Patent award and the Certificate of Appreciation, respectively. In November 2010, he was included in one of the Marquis Who's Who directories. In his main work, he made the standardization activities of 3GPP LTE (2005-2007) and IEEE 802.11ad (2009-2010) with these developments. His research has spanned smart antennas, MIMO, synchronization, network coding, D2D communication, and in-band full-duplex realization, and D2D communication.