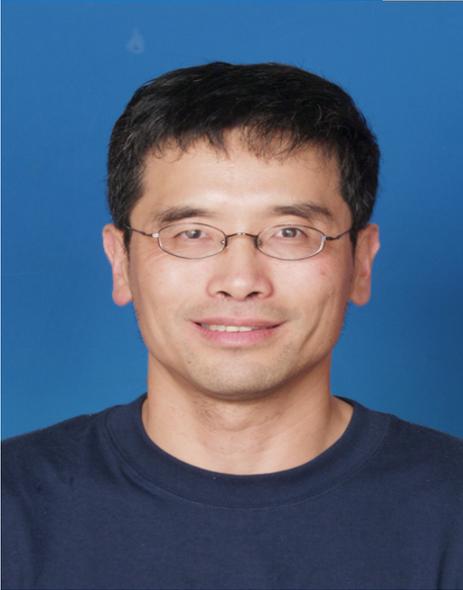


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Forward Channel Estimation for MIMO Precoding in Cooperative Relay Wireless Transmission Systems



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Abstract: Linear precoding for wireless multi-input-multi-output (MIMO) transceivers has demonstrated substantial strength in cooperative relay networks for achieving high system capacity and for improving receiver performance. However, traditional precoder optimization critically relies on knowledge acquisition of channel state information available at source node. For linear MIMO precoding design at the source, we propose a novel method to estimate the quadratic product of forward-link channel information between source node and relay node. To conserve bandwidth, our source node estimates the forward-link MIMO channel by utilizing signals transmitted by amplify-and-forward (AF) relay node to destination node without requiring the cumbersome default method of coordinated relay channel estimation and relay feedback of its estimated channel state information. From the overhead AF relay signals, the source node simply extracts the quadratic channel information of its forward-link before designing its channel-depending precoder. In addition to presenting a low overhead method for forward channel

Biography: Zhi Ding (S'88-M'90-SM'95-F'03) is the Child Family Endowed Professor of Engineering and Entrepreneurship at the University of California, Davis. He also holds a joint appointment as a thousand-talent professorship at Southeast University in Nanjing, China. He received his Ph.D. degree in Electrical Engineering from Cornell University in 1990. From 1990 to 2000, he was a faculty member of Auburn University and later, University of Iowa. Prof. Ding has held visiting positions in Australian National University, Hong Kong University of Science and Technology, NASA Lewis Research Center and USAF Wright Laboratory. Prof. Ding has active collaboration with researchers from several countries including Australia, China, Japan, Canada, Taiwan, Korea, Singapore, and Hong Kong.