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The evaluation of performance for 3-Dim/M MIMO+BF system with AoA and AoD phenomenon

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In this article, a proposed scenario with M-MIMO (massive multi-input multi-output) beamforming system over the 3-Dim (three-dimension) fading channel model is investigated. That is a scenario of the 5G (fifth generation) radio with M-MIMO beamforming signaling scheme over 3-Dim environment which contains the correlation phenomenon between AoA (angle of arrival) and AoD (angle of departure) is developed. Both AoA and AoD which impacts on the overall system performance are examined too. Moreover, the evaluation of system performance for an M-ary PSK constellation modulation over 3-Dim/M-MIMO+BF (3-Dim channel plus M-MIMO beamforming) is obtained with the determination of MGF (moment generating function) and CF (characteristic function) to avoid the difficulty in calculation of CDF (cumulate distributed function) and jpdf (joint probability density function) of system directly. Besides, the channel capacity of the radio system is presented by using of the mutual information to confirm the accuracy of the theoretical derived formulas. Furthermore, the evaluation to BER (bit error rate) probability for an M-ary PSK (phase-shifting keying) constellation scheme over the model of 3-Dim/M-MIMO+BF with different numbers of transmitter and receiver are deployed as the validated scenario. The correlation parameter between AoA and AoD definitely generates the impact on the system performance with the consideration of simplified 3-Dim channel which is the key parameter coordinates the system performance when compare to the others.

Biography

Joy long-Zong Chen is a Professor in Electrical and Computer Engineering and Ohio Research Scholars Endowed Chair in Wide Area Surveillance at the University of Dayton, Dayton, Ohio, USA. He is the director of the Center of Excellence for Computer Vision and Wide Area Surveillance Research (Vision Lab) at UD

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