Random Matrix Theory Applications to Wireless Communications

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Abstract

Consider the signal-to-interference ratio (SIR) statistics with linear minimum mean-square error (LMMSE) detection for users in a wireless communications. The joint distribution of the SIRs for a finite number of users and the empirical distribution of all users' SIRs are both investigated when the number of users and the number of channels tend to infinity with the limit of their ratio being positive constant. Moreover, the sum of the SIRs of all users, after subtracting a proper value, is shown to be asymptotic Gaussian.