Optimal Power Control for CDMA Systems in the Wideband Limit

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Traditional methods for solving multiuser control problems in CDMA systems do not scale well as the number of users in the system increases. To address this problem we develop a wideband limit approximation for dynamic programming problems in CDMA systems. This approximation greatly simplifies the state space and evolution equations for the users in a CDMA cell, thereby simplifying the optimal control problem. This wideband convergence result holds for a number of different linear multiuser receiver structures including the MMSE and matched filter receivers.