Convex Restrictions for Outage Constrained MU-MISO Downlink under Imperfect Channel State Information

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Abstract : In this paper, we consider the MU-MISO downlink scenario, under imperfect channel state information (CSI). The main issue in imperfect CSI is to keep the probability of each user achievable outage rate below the given threshold level. Such a rate outage constraints present significant and analytical challenges. There are many probabilistic methods are used to minimize the transmit optimization problem under imperfect CSI. Here, decomposition based large deviation inequality and Bernstein type inequality convex restriction methods are used to perform the optimization problem under imperfect CSI. These methods are used for achieving improved output quality and lower complexity. They provide a safe tractable approximation of the original rate outage constraints. Based on these method implementations, performance has been evaluated in the terms of feasible rate and average transmission power. The simulation results are shown that all the two methods offer significantly improved outage quality and lower computational complexity.