

Non-orthogonal multiple access (NOMA) can exploit the power difference between the users to achieve a higher spectral efficiency. Thus, the power allocation plays a crucial role in NOMA. In this paper, we study the power allocation for hybrid automatic repeat request (HARQ) in NOMA with two users. For the power allocation, we consider the error exponents of the outage probabilities in HARQ with incremental redundancy (IR) and derive them based on large deviations. While a closed-form expression for the error exponent (or rate function) without interference is available, there is no closed-form expression for the error exponent with interference. Thus, we focus on the derivation of a lower bound on the error exponent in this paper. Based on the error exponents, we formulate a power allocation problem for HARQ-IR in NOMA to guarantee a certain low outage probability for a given maximum number of retransmissions. From the simulation results, we can confirm that it is possible to guarantee a certain outage probability by the proposed power allocation method.