# ABSTRACT

In this final assignment, it was simulated the comparison both of two methods i.e. **Optimal** transmission scheme [1] and **Suboptimal** transmission scheme [5]. The purpose of these two methods is to get the minimum transmission power for wireless data over channel fading.

At the transmitter, there is a server that organizes number of withdrawal packets from buffer and number of packets to transmit to receiver with certain power, which is appropriated with delay constraints and packet loss constraints. Channel is modeled as eight channel state by partitioning it into SNR intervals with certain steady state probability. Both of these methods use an optimal transmission power policy with delay constraints and packet loss constraints that is appropriated with the channel states.

**Optimal** Policy use three parameters $t_1$, $t_2$, and $t_3$ as threshold for number of withdrawal packets and number of transmit packets. Meanwhile **Suboptimal** Policy uses three control parameters: a channel fading threshold $h_a$, a transmission rate threshold $r_a$ and the buffer capacity threshold. Using those parameters with exact value, we found transmission delay, transmission power and packet loss for each of channel state.

From simulations, it was derived the minimum average power transmission with **Suboptimal** Policy close to **Optimal** Policy and achieved delay constraints and packet loss constraints.