

## **ABSTRACT**

The frequency spectrum is an expensive and limited resource while the massive demand of telecommunication services both of data and number of connection continue to raise.

The ordinary network becomes denser to meet the growing needs of the services. It can be done by introducing more cells in the network, with lower coverage than the ones that already exist or simply by splitting the existing cell, to allows a better spatial reuse of the spectrum. However, the introduction of more cells also leads to high-interference between cells (low values of Signal to Interference and Noise Ratios (SINRs)). In order to maximize the use of spectrum, it is necessary to study that behaviour and help to mitigate the interference.

The research presented here focus on the use of the iterative water-filling algorithm to improve network cell throughput in LTE network. In the context of spectrum management, iterative water-filling is a technique to adjust power as needed according to the conditions in the environment of interference. The results show that the proposed method can increase the overall cell throughput.

**Keywords:** LTE, Interference, SINR, water-filling