

ABSTRACT

The number of active users in a cell in the WCDMA system is very limited and influenced by co-channel interference and fading radio channels. Power control is needed to reduce interference by reducing the effects of near-far problem, co-channel interference and fading channels. Radio channel are changing randomly. So that, required power control that works fast and precisely.

Fuzzy Genetic Algorithm (FGA) gives the correct solution to the problem of dynamic decision making under conditions of non-linear, based on simple rules. This thesis tries to apply the adaptive SIR based power control using the FGA on uplink WCDMA system, and compared with fixed step size method.

Use of Fuzzy Adaptive Genetic Algorithm on the SIR-based Power Control for WCDMA systems can increase the number of active users while maintaining QoS standards. This is shown by the decline in value of outage probability compared to fixed step methods. Average outage probability at fixed power control step is 0.270036 while the FGA power control is 0.18465. Using FGA power control can increase the capacity 13,2% than fixed step power control.