

# Chapter 5

## Conclusions

Multi-Threshold CMOS (MTCMOS) is a circuit style that can effectively reduce leakage power consumption which is more and more important in deep submicron (DSM) regimes. In this thesis, we have presented two standard cell placement algorithms for cluster-based MTCMOS design to minimize wirelength overhead and sleep transistor size. The first one is a *functionality directed placement algorithm*. In this algorithm, the *initial placement* is obtained from the cell placement according to the cluster information. The second one is a *direct placement with iterative cell-moving algorithm*. In this algorithm, the *initial placement* is obtained from the direct placement. Then the *cell moving among clusters* method is used to refine these initial placement. Using the *functionality directed placement algorithm*, we can achieve on the average 14.38% reduction of chip area yet 32.43% increase of total wirelength compared to the direct placement. Using the *direct placement*

*with iterative cell moving algorithm*, we can achieve on the average 9.18% reduction of chip area yet 5.16% increase of total wirelength compared to the direct placement.

