

Seminar

# A Novel Algorithm for Reducing the Power Loss of Routing Paths in ONoCs

Optical networks-on-chips (ONoCs) have the advantages of high bandwidth, low power consumption, and low latency, so it is widely considered to have great research prospects in the field of multiprocessor systems. However, the scale of ONoCs is greatly limited by the power loss and optical signal-to-noise ratio (OSNR). Therefore, how to reduce the power loss of the routing paths and increase their OSNR has become an important research in the field of ONoCs. In this paper, on the basis of the structural characteristics of 2D mesh-based ONoCs, a general all-pass optical router model with five ports is proposed. According to this model, we propose a novel algorithm that can be used to find routing paths with the minimum power loss and improve the OSNR of the routing paths. The simulation results indicate that in the case of the longest optical link selection in different optical network scales, the optical routing paths selected by our algorithm are superior to the dimensional-order routing paths in terms of power loss and OSNR. Furthermore, our algorithm will obtain better performance with the expansion of network size.

## Contact

zhidan.zheng@tum.de

## Advisors

Zhidan Zheng