Wireless Network on Chip

The group is working on a novel technique to use a wireless link to exploit its natural broadcast capability and reduce the network contention. We aim to defy conventional wisdom by proposing broadcast communication as the central pillar of future manycore architectures and algorithms.

Summary

The number of processing elements is increasing both at the chip level and at the datacenter level. To exploit all their potential an excellent interconnection is need to sustain the data exchange between cores or System-on-Chip (SoC). Then, bandwidth and latency will determine the peak performance we can obtain. UCAN is working to develop innovative optical interconnections between racks and SoCs to offer huge bandwidths with low-latencies and reduced power consumption. Inside a core, the group is evaluating the use of solutions enabled by new materials, such as graphene, to design and establish a wireless Network on Chip (NoC).

Objectives
1. NoC-aware architectures
2. Exploit the co-design of NoC-based architectures to implement more efficient algorithms
3. How to divide the traffic between the different NoCs implemented
4. Combination of an optical layer with a wireless layer

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