

Seminar

# Partitioning Strategies of Wavelength-Routed Optical Networks-on-Chip for Laser Power Minimization

Many researchers are currently at work to assess the congruent multiples in performance and energy efficiency that should be expected by the photonic integration of multi and many-core processors. However, such processors and their interconnection networks are typically viewed as monolithic resources, which fails to capture the most recent trends in the usage model of these computation-rich devices. In fact, partitioning of computation and communication resources is gaining momentum as a way of enabling application concurrency, and of consolidating software functions with heterogeneous requirements onto the same platform. Optical NoCs have never been embodied in this context. This work bridges this gap and proposes a partitioning technology for wavelength-routed ONoCs, including an algorithm for online allocation of wavelengths, that aims at their maximum reuse across partitions. This way, laser sources that are not in use at a given point in time can be powered-off, thus mitigating the most significant contribution to static power dissipation in optical NoCs.

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