

# Wavelength Stealing: An Opportunistic Approach to Channel Sharing in Multi-chip Photonic Interconnects

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# Problem: What is the “best” topology design for photonic substrates?



Point-to-Point  
or  
Channel sharing

# Our Contributions

- **Analytical model to quantify the limits and gains of channel sharing**
  - # of senders per channel  $\leq 3$
  - Performance speedup  $\leq 1.70x$
  
- **“Wavelength Stealing” architecture**
  - Arbitration-free accesses
  - Strong fairness guarantees
  - Up to **28%** EDP improvement over baseline