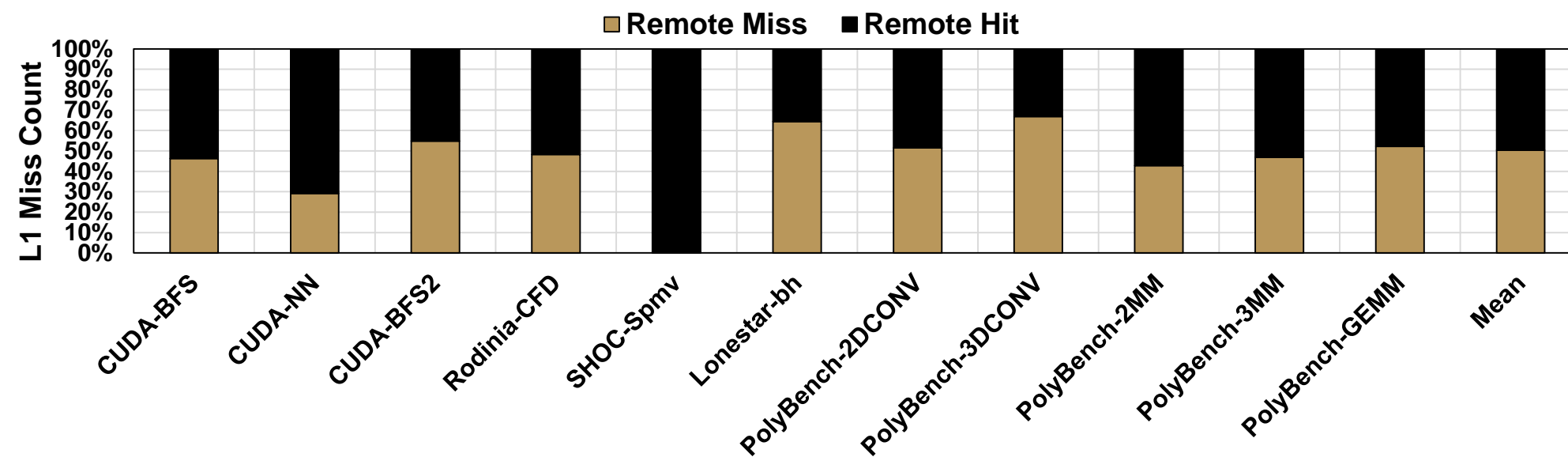
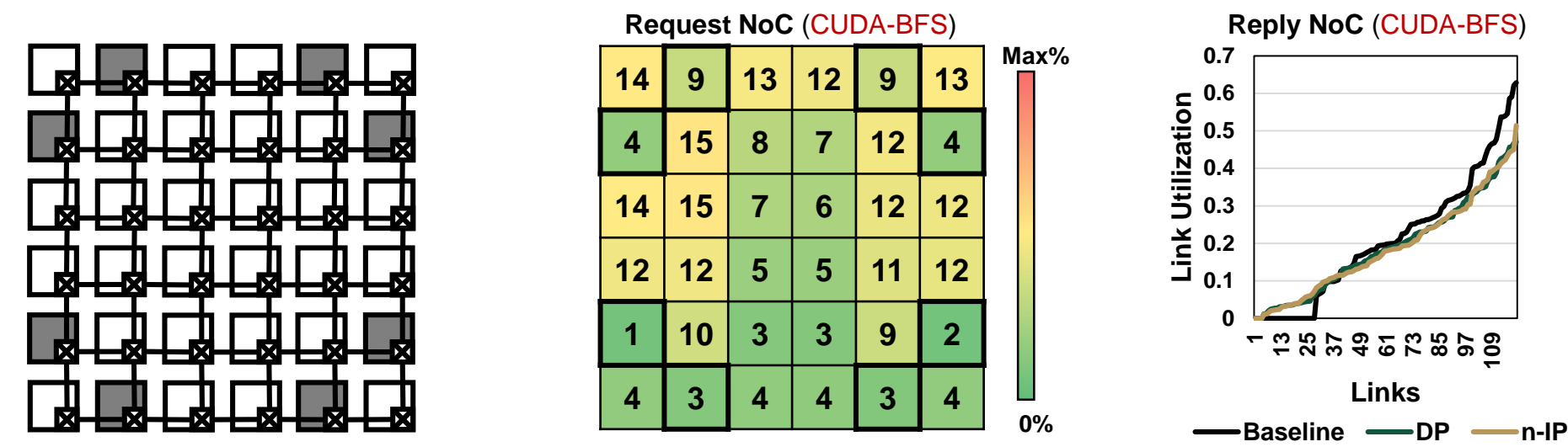


1- Inter-core Communication Opportunities

Observation#1: Inter-core Locality



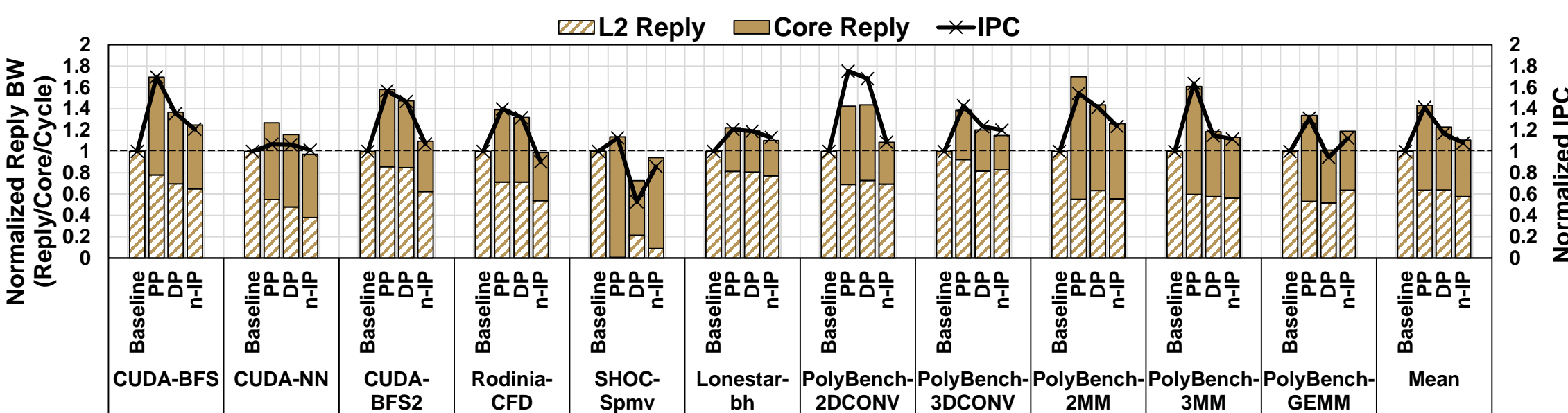
Observation#2: Underutilized NoC BW



2- Inter-core Communication Challenges

Probing/Communication Scenarios

Scenario	Is the data shared?	Which remote core has the data?	How is the data fetched?
Perfect Probing (PP)	Known	Known	Zero-cycle communication
Direct Probing (DP)	Known	Known	Direct communication with the nearest supplier
Naïve Indirect Probing (n-IP)	Known	Search all cores	Sequentially search the cores one by one



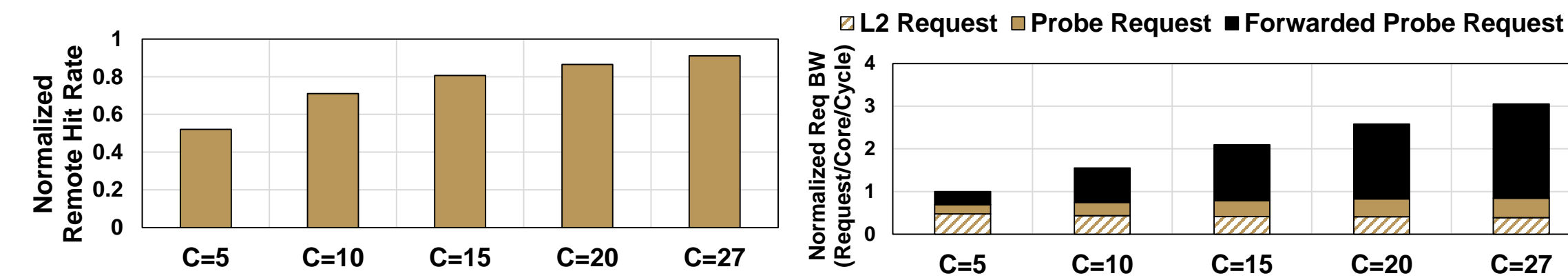
Goal Unlock **additional** remote-core BW and enable efficient inter-core communication for better performance and uniform NoC utilization

Contribution Efficient core-to-core communication to exploit the inter-core locality while managing the **communication/searching overhead** in the NoC

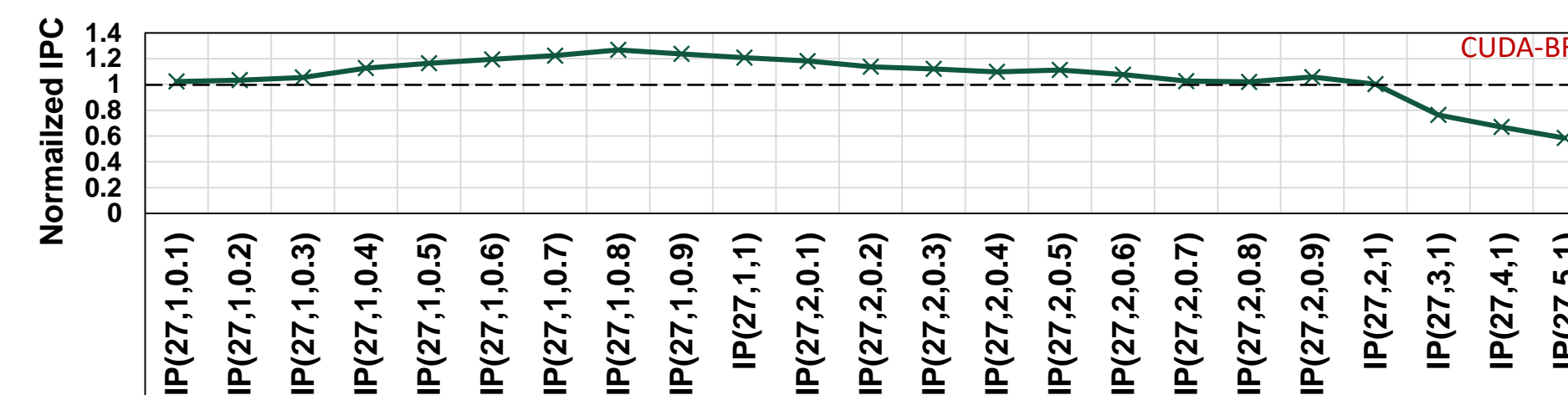
3- Characterization – Probe Coverage vs. Probe Rate

Indirect Probing $IP(C, S, P)$

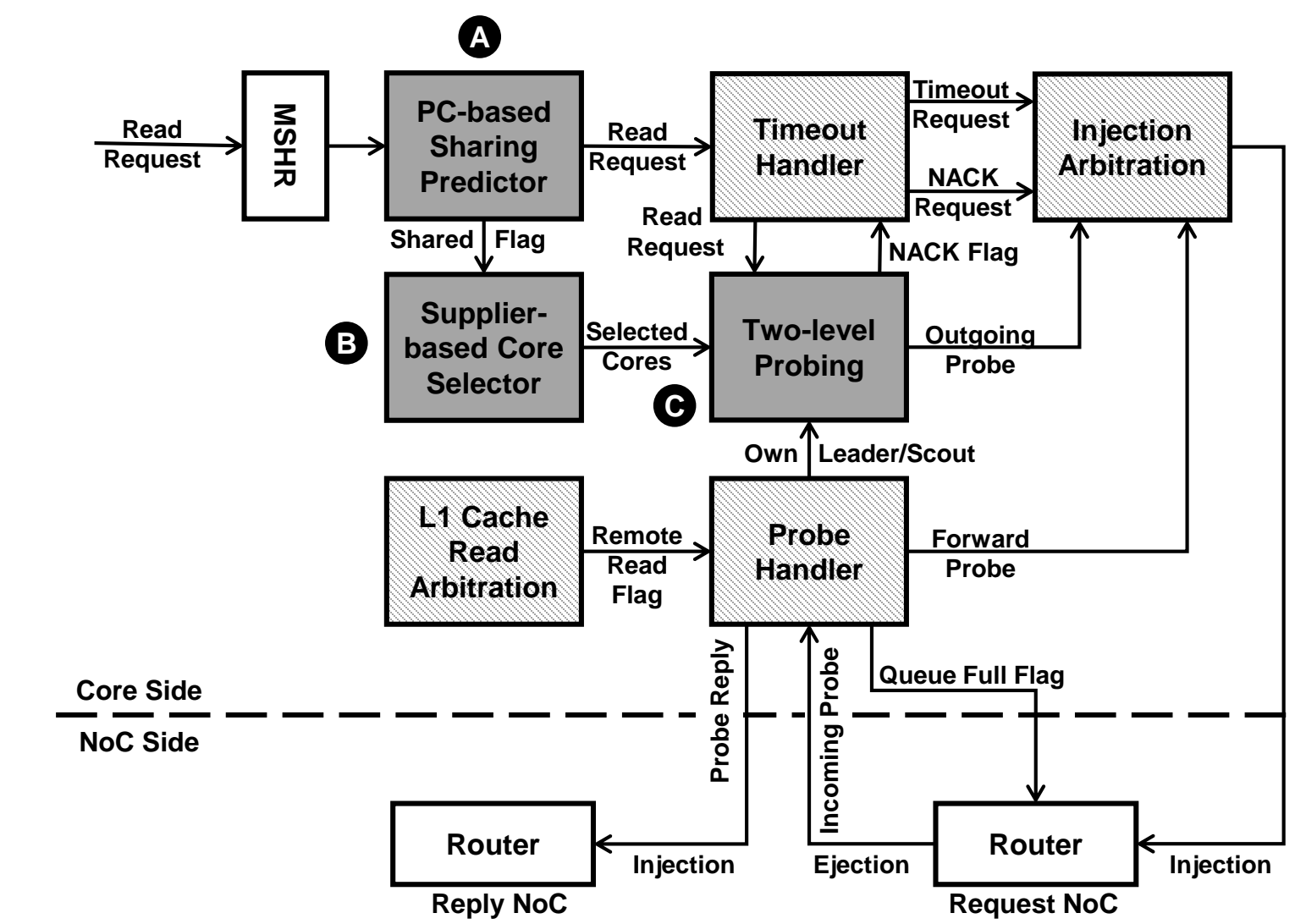
Probe Coverage (C): The number of cores to search



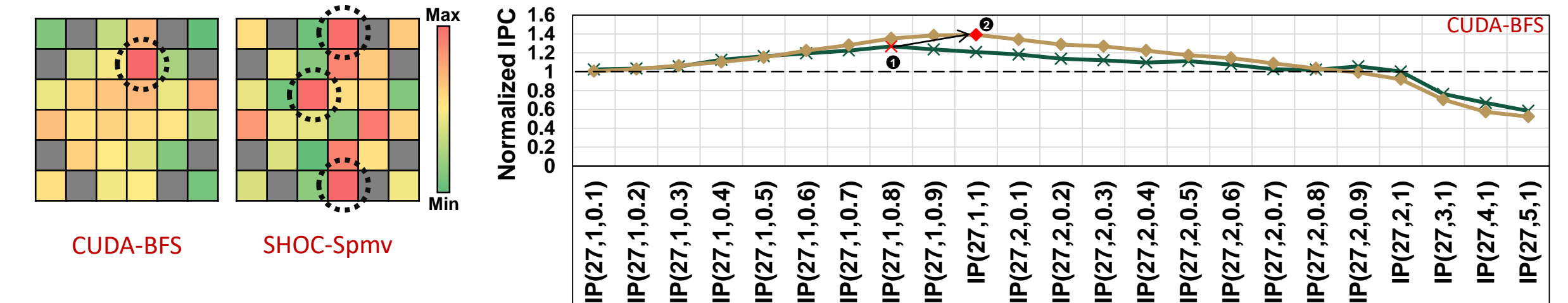
Probe Rate (S, P): S probes are sent per read request, with a probability of P ($0 < P <= 1$) or S-1 probes per read request are sent with a probability of 1-P



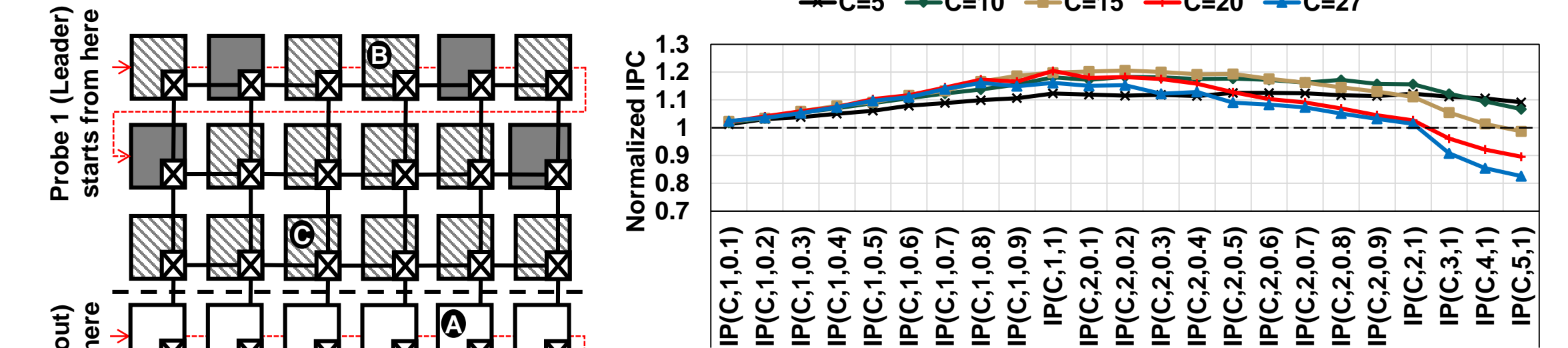
4- Towards Efficient Inter-core Communication



Supplier-based Core Selector



Two-level Probing



PC-based 2-bit Sharing Predictor

