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Graph Algorithms on Future Architectures

Motivation

- Fast, efficient graph analysis is important and pervasive
- Heterogeneous hardware is coming here
- We are building a library that helps developers use both

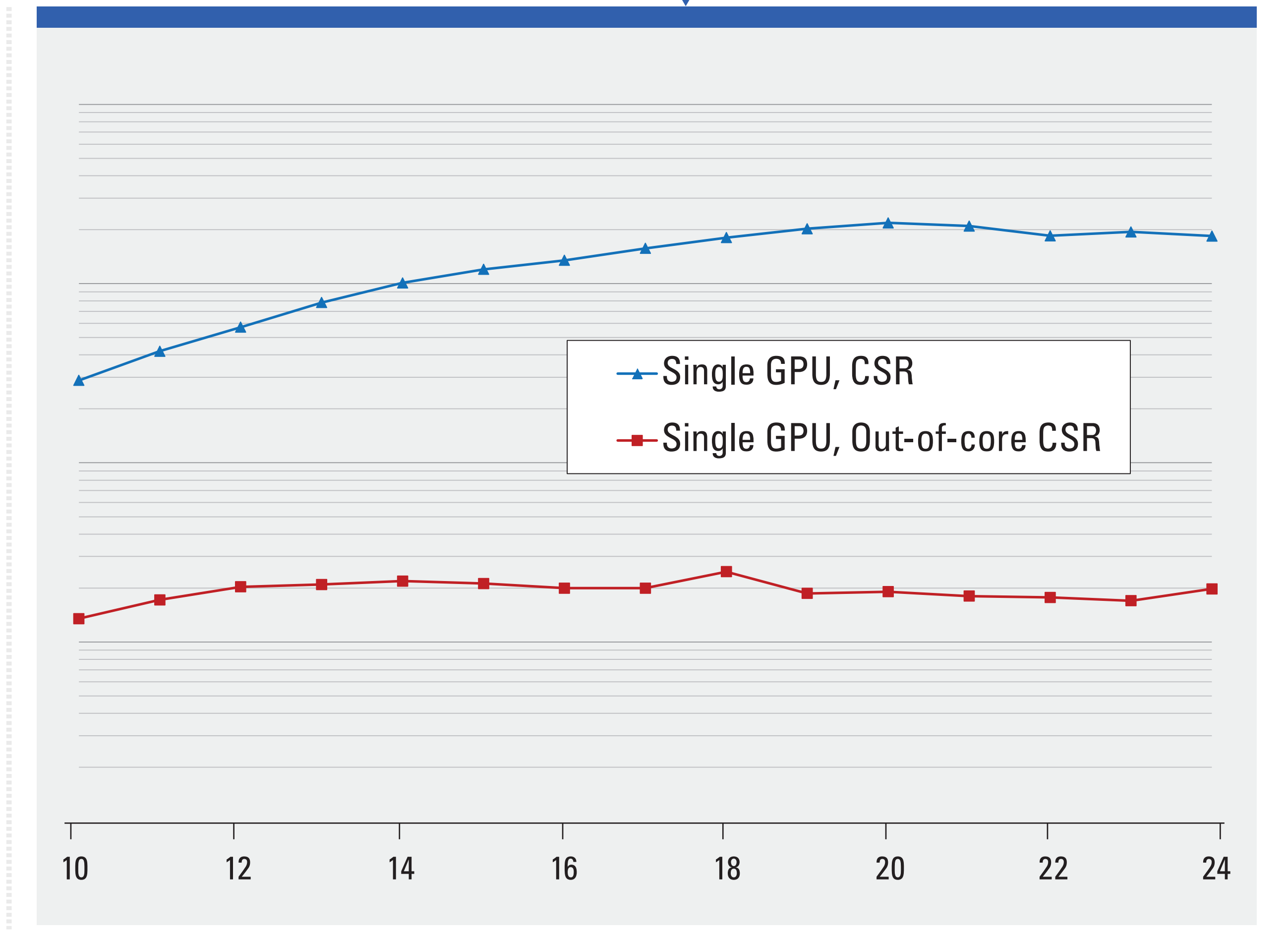
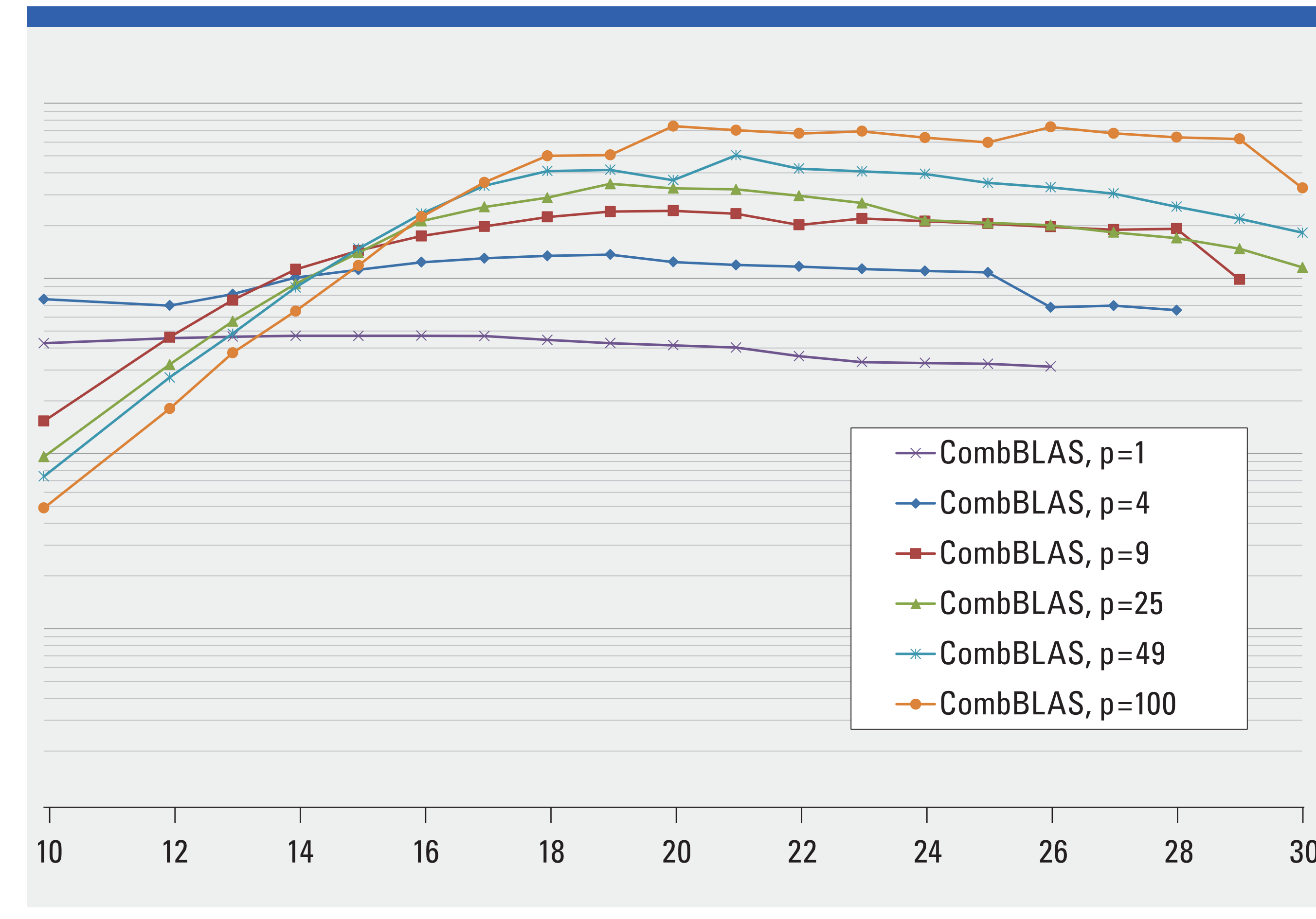
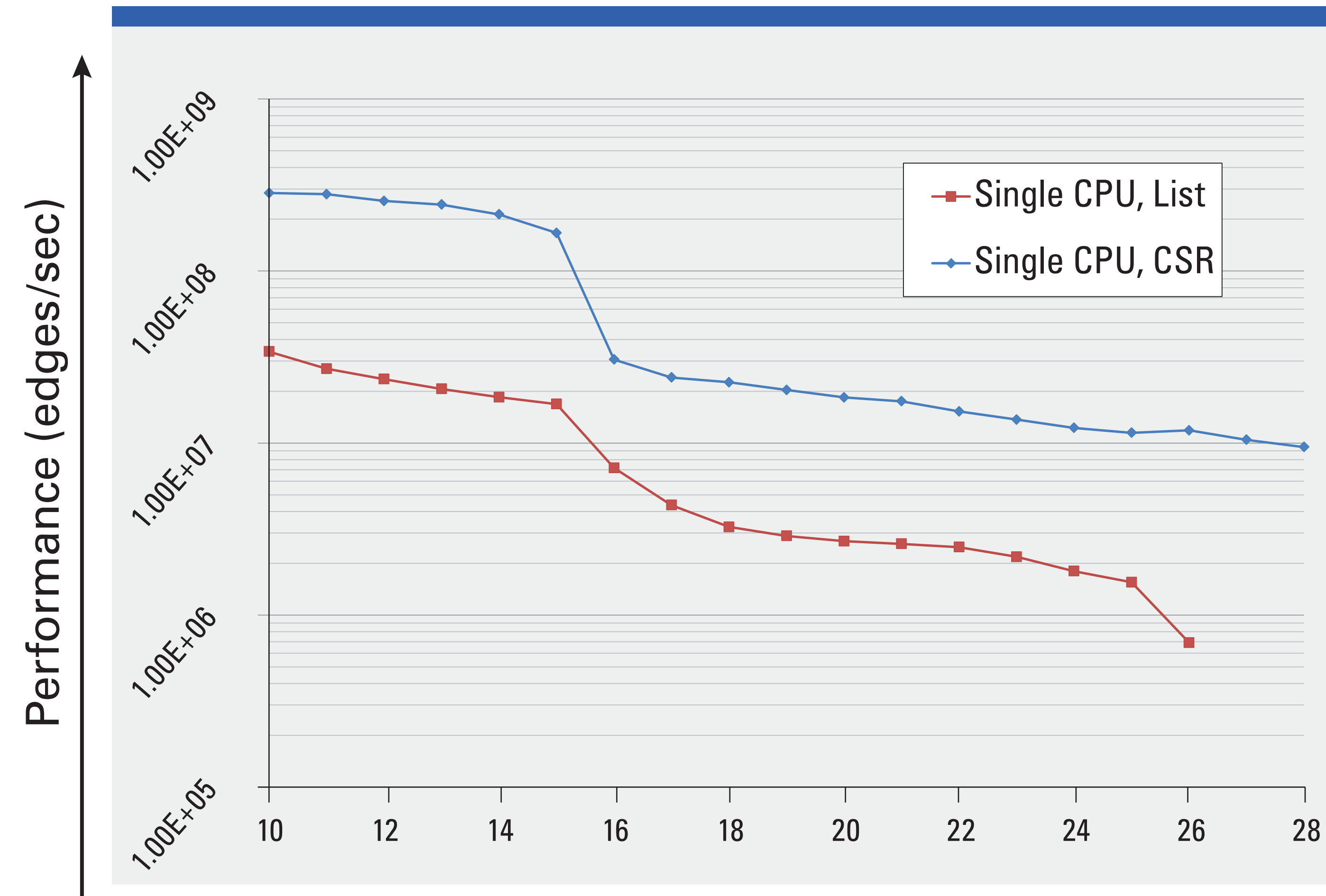
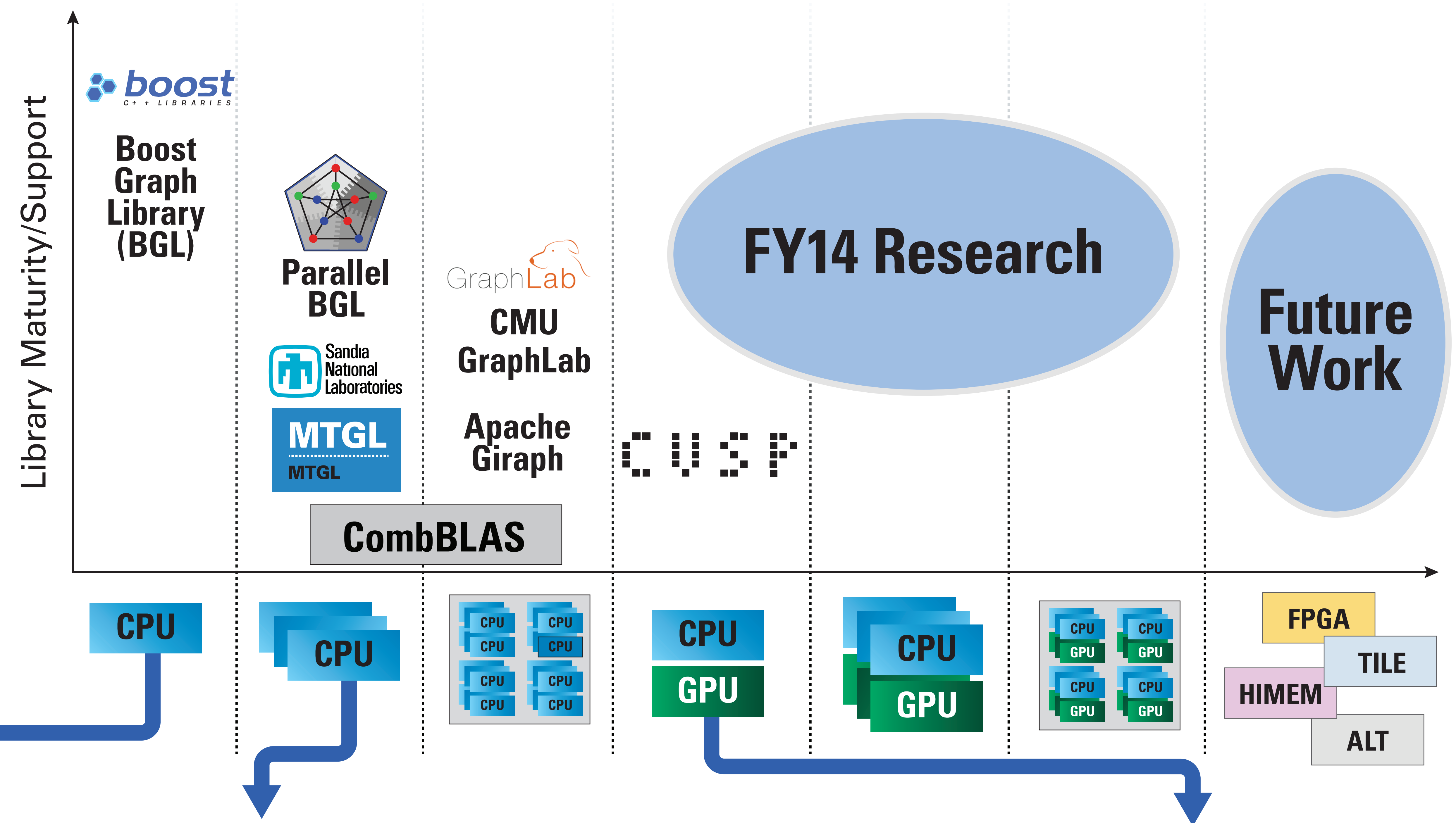
Current Results

- Survey of current graph algorithm libraries
- Baseline implementations on CPU architectures
- CombBLAS library shows promise of scalability
- Initial implementation of GPU algorithms

Current Work

- Designing library for GPU and Multi-GPU graph library (in collaboration with Indiana University)
- Borrowing concepts from BLAS community
- Mapping to unique GPU architecture for performance

Maturity/Support of graph libraries across the different types of computer architectures



Graph Scale, N ($|V| = 2^N$, $|E| = 16 |V|$)

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