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Superconductor Electronic Logic Family Metrics and Comparisons

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***Abstract*—Logic families are key to the future of digital superconductor electronics (SCE). Predicting the utility and cost of a given logic family for computing is challenging because logic families must satisfy various functional requirements, operational requirements, and technical requirements. However, common metrics such as throughput, power, area, and yield do not cover the full range of requirements. In this work, we first analyze the shortcomings of common figures of merit, and second, we establish a methodology and set of benchmarks tailored to SCE's target application domains. Lastly, we survey the most prominent superconductor logic families and perform both qualitative and quantitative analysis, where possible.**

***Keywords (Index Terms)*—Digital superconductor electronics, logic families, metrics**

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