

# Linear Algebra Based Graph Analysis on RISC-V GPGPU Vortex

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**Abstract—Abstract!!!!**

**Index Terms—**GraphBLAS, Sparse Linear Algebra, Graph Analysis, GPGPU, RISC-V

## I. INTRODUCTION

High-performance graph analysis, linear algebra, GPGPU RISC-V

Contribution

- 1) !!!
- 2) !!!
- 3) !!!

## II. SPLA GRAPH ANALYSIS LIBRARY

GraphBLAS inspired, linear algebra based GPGPU, OpenCL

Algorithms: BFS, Triangles, SSSP, PageRank

## III. RISC-V GPGPU VORTEX

Vortex [1]  
RISC-V ISA  
Configurable  
Simulators, FPGA  
OpenCL

## IV. EVALUATION

Goals, research questions.

- RQ1 Scaling  
RQ2 FPGA resources consumption  
RQ3 Performance (FPGA)

Common settings: graph, algs,

### A. Scaling

Design (what, how)  
Graphics  
Results analysis

### B. FPGA resources consumption

Design (what, how)  
Graphics  
Results analysis

### C. Performance

Design (what, how)  
Graphics  
Results analysis

## V. CONCLUSION

Conclusion  
Future work

## REFERENCES

- [1] B. Tine, K. P. Yalamarthy, F. Elsabbagh, and K. Hyesoon, “Vortex: Extending the risc-v isa for gpgpu and 3d-graphics,” in *MICRO-54: 54th Annual IEEE/ACM International Symposium on Microarchitecture*, ser. MICRO ’21. New York, NY, USA: Association for Computing Machinery, 2021, p. 754–766. [Online]. Available: <https://doi.org/10.1145/3466752.3480128>