

# CPS: TTP Option: Medium: Multiobjective Control of Catoptric Systems

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## 1. RESULTS FROM PRIOR NSF SUPPORT

**CSR: Small: Concurrent Accelerated Data Integration (CNS-1527510, PI: R. Chamberlain)**, 10/2015–9/2019, \$519,275.

**Intellectual Merit** – This project investigates the accelerated execution of data integration workflows, which increasingly are bottlenecks in data science. Execution platforms being targeted include both graphics engines and FPGAs. Publications resulting from this work include [2, 3, 4, 5].

**Broader Impacts** – This research project has supported 3 graduate students and 4 REU students. The applications investigated come from the fields of computational biology, astrophysics, and the Internet of Things, further expanding the scope of the students’ experience. A benchmark suite of these workflows has been released as a community resource [1].

## REFERENCES

- [1] A. M. Cabrera, C. J. Faber, K. Cepeda, R. Derber, C. Epstein, J. Zheng, R. K. Cytron, and R. D. Chamberlain. Data Integration Benchmark Suite v1. DOI: <http://dx.doi.org/10.7936/K7NZ8715>, Apr. 2018.
- [2] A. M. Cabrera, C. J. Faber, K. Cepeda, R. Derber, C. Epstein, J. Zheng, R. K. Cytron, and R. D. Chamberlain. DIBS: A data integration benchmark suite. In *Proc. of ACM/SPIE Int'l Conf. on Performance Engineering Companion*, pages 25–28, Apr. 2018.
- [3] R. D. Chamberlain. Assessing user preferences in programming language design. In *Proc. ACM Int'l Symp. on New Ideas, New Paradigms, and Reflections on Programming and Software*, pages 18–29, Oct. 2017.
- [4] J. Meier, C. Gill, and R. D. Chamberlain. Combining admission and modulation decisions for wireless embedded systems. In *Proc. IEEE 19th Int'l Symp. Real-Time Distributed Computing*, pages 69–78, May 2016.
- [5] J. A. Shidal. *Exploiting the Weak Generational Hypothesis for Write Reduction and Object Recycling*. PhD thesis, Dept. of Computer Science and Engineering, Washington University in St. Louis, May 2016.