Reducing Memory Access Latencies using Data Compression for Sparse, Iterative Linear Solvers

Neil Lindquist’s Thesis Defense

9:30am Tuesday, April 16th Peter Engle 229

Solving large, sparse systems of linear equations plays a significant role in certain scientific and engineering computations, such as approximating the solutions to partial differential equations. However, solvers for these types of problems usually spend most of their time fetching data from main memory. In an effort to improve the performance of these solvers, this work explores using data compression to reduce the amount of data that needs to be fetched from main memory. A variety of compression methods were tried, with certain methods able to improve the performance of the test case.

