

# **Trident: An FPGA Compiler Framework for Scientific Computing**

Justin L. Tripp, Kristopher D. Peterson, Christine Ahrens  
Jeffrey D. Poznanovic and Maya Gokhale

Trident is a compiler for floating point algorithms written in C, producing circuits in reconfigurable logic that exploit the parallelism available in the input description. Trident automatically extracts parallelism and pipelines loop bodies using conventional compiler optimizations and scheduling techniques. Trident also provides an open framework for experimentation, analysis, and optimization of floating point algorithms on FPGAs and the flexibility to easily integrate custom floating point libraries.