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Results of Software Threading Experiments in ASC Codes

The number of CPU cores per processor in computer systems continues to increase and the MPI-everywhere approach will likely not be sustainable. One approach that might make more efficient use of the processor resources is to incorporate threads into the programming model. The ASC codes are large and complex. A massive re-write or re-factoring to use threads is daunting. Several code teams at Sandia were tasked to introduce threading into some kernel or subset of their ASC code. The purpose of which was to better understand how to program threads and the impact of threads on their code. This talk will provide a summary of the approaches and results for three of the experiments.