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SANDIA NATIONAL LABORATORIES

SNL ADTM

Monthly report for ECP ATDM ST projects

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ECP Monthly reporting

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ATDM Tools and DevOPs

The team worked on supporting compile and build on ATS2 initial deployment systems for SPARC. Conducted performance runs of EMPIRE on Trinity and an initial compile and run of SPARC on Intel Skylake processors

ATDM Math Libraries

The team been focusing on getting solver times down for both the scalable solvers sub team and the kokkoskernels sub team. This has involved a lot of coordination with the EMPIRE team, profiling, and diagnosing what the biggest scalability factors are. The team has not come to any conclusions yet, but several new factors for poor scalability are surfacing.

ATDM Data and Visualization

Implemented a functional Avatar-Trilinos integration for choosing Trilinos/MueLu parameters

The team made substantial improvement on the TuckerMPI compression unit in ParaView/Catalyst. It now supports structured and multiblock data structures in parallel and better records metadata through JSON files.

The EMPIRE code was updated to support checkpoint/restart in electrostatic simulations. The FAODEL particle data interface is integrated into the code and allows users to control different I/O options (checkpoint frequency, storage paths, and restart settings). A similar interface is being developed for checkpointing the field data needed in electromagnetic simulations.

Made progress in developing infrastructure to perform data collection on Voltrino architecture. Working towards collecting, classifying, and learning policies for dynamic p-states

ATDM Software Ecosystem

The OSR team installed packages from the OpenHPC software stack on one of the ASC testbeds to identify gaps for our workloads. They also updated internals of the scheduler in the Qthreads runtime system for the IBM POWER9 (ATS-2) architecture.