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SANDIA NATIONAL LABORATORIES

SNL ADTM

Monthly report for ECP ATDM ST projects

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Prepared by: Aaron Pennington

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ECP Monthly reporting

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Program models and runtimes

In May the PMR team made progress porting reactions to Kokkos, continued Trilinos integrations work and refactored the build system. The team worked on MPI interoperability and succeeded in making it work with some extra simplifications. Progress on the Contact app was made, in particular the gather/bcast collectives for DARMA. Expect to transition to full EMPIRE soon. Planned FY19 activities and milestones.

ATDM Tools and DevOPs

In May the team made progress working with EMPIRE integration and making the switch to a common set of configuration scripts. Made progress on setting up a Trilinos CUDA build on doom and migrating to CUDA 9.2. Kokkos Kernels was successfully ported to ARM64. SPARC build is complete and passed all itar tests. Planned FY19 activities and milestones.

ATDM Math Libraries

In May the team made progress working on mimiEM to match results and common solver settings, with a focus on KNL and targeting GPU by the end of Q3. Progressed to up to 4th order for EMPIRE field solve. LOCA integrated into SPARC, resulting in a 4x speed up in continuation run. The team made performance improvements on block tpetra gather/scatter. Worked with the SPARC team in evaluation of GPU solvers. The team resolved compiler specific failures and intend to promote with the next Kokkos ecosystem update into Trilinos. Conducted planning for FY19 to meet ASC and ECP requirements.

ATDM Data and Visualization

In May the team made progress working on TuckerMPI issues, row vs. column major ordering issue. The team also made progress on a structured grid interface for ioss/catalyst interface and set up a code review in anticipation for a merge into SPARC. Tests for particle CR and branch are now up to date. The team merged EMPIRE/Fluid mesh check-pointing code into develop branch and made progress toward merging EMPIRE/PIC Particle write/read calls into develop branch. The team conducted planning activities for FY19.

ATDM Software Ecosystem

In May the team made progress on mutrino and voltrino and worked with ECP container.
Progress was also made on qthreads version of miniMS. Mini SM renamed nimbleSM. The team participated in the ATDM Deep Dive at Sandia, New Mexico, showcasing recent efforts and our path forward. The team conducted planning activities for FY19 OS and Runtimes work, to meet both ECP and ASC requirements.

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