

SANDIA NATIONAL LABORATORIES

SNL ADTM

Monthly report for ECP ATDM ST projects

October 24, 2018

Prepared by: Aaron Pennington

Prepared for:

ECP Monthly reporting

Issued by Sandia National Laboratories, operated for the United States Department of Energy by National Technology and Engineering Solutions of Sandia, LLC.

NOTICE: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government, nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represent that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government, any agency thereof, or any of their contractors or subcontractors. The views and opinions expressed herein do not necessarily state or reflect those of the United States Government, any agency thereof, or any of their contractors.



ATDM Tools and DevOPs

In October the team merged in updated ATDM/Trilinos configuration to include SPARC requirements. Assisted and worked on issues identified by the EMPIRE switchover to the ATDM/Trilinos configuration. Progress was made on automating dashboard triaging. Discovered and began addressing issues with mixed language calling with gcc-7.2 on Power8. Worked on new Python tool to filter CDASH reports to only show new issues. Completed ECP ST review.

ATDM Math Libraries

In October the team put an algorithm in place to prevent inverted elements in SPARC during refinement and worked on tests to morph mesher and should be ready for SGM integration soon. The team worked on solver rebalance and corrected issues. Complete SIMD work. Worked out next steps for solver improvements for EMPIRE. Adjusted some solver settings and to improve performance; strong scaling curves are flat instead of ascending etc. Worked on optimizing kernels for SPARC. Completed ECP ST reviews.

ATDM Data and Visualization

The team worked on cleaning up branch for merge into SPARC master dev branch. Progress was made building scripts for catalyst builds on all HPC platforms of interest. Worked on adding TuckerMPI reader as plugin for catalyst. Completed ECP project review

ATDM Software Ecosystem

Work has continued on NimbleSM, which now runs in a container and can be used modularly with an MPI code. The team also made progress on a qthreads version of NibleSM. Worked on build system issues within NimbleSM and Sierra for GPUs. Progressed on getting kookfied material models in NimbleSM. The team incorporated panel feedback from ECP project reviews into FY19 plans.

