

SANDIA NATIONAL LABORATORIES

SNL ADTM

# Monthly report for ECP ATDM ST projects

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### 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 NimbleSM. 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.

