

Proposal Title (exactly as it appears on submission): The Detailed Physical Structure of the Circumgalactic Medium

Year 1			
Milestone	Details	Dates	Status (renewals only)
RM.A Develop fiducial turbulent CGM model and run resolution study, including first petascale simulation of the CGM.	Resources: Summit Node hours: 175k M Filesystem storage (TB and dates): 200 TB scratch, 1/19 - 6/19 Archival storage (TB and dates): 150 TB, 3/19 - 6/20 Software Application: Cholla Tasks: Determine appropriate initial conditions for fiducial run; Run 7 simulations increasing resolution from 128^3 to 8192^3 Dependencies: N/A	1/19 - 6/19	N/A
RM.B Parameter study: Run suite of turbulent box simulations at varying CGM pressure and mach number.	Resources: Titan Node hours: 355k Filesystem storage (TB and dates): 200 TB scratch, 7/19 - 12/19 Archival storage (TB and dates): 350 TB, 7/19 - 6/20 Software Application: Cholla Tasks: Run 10 parameter study simulations from $P = 10$ to $P = 300$ and $M = 0.3$ to $M = 1.0$ (as outlined in Section 2 of Project Narrative) Dependencies: RM.A	6/19 - 12/19	N/A
RM.C Compute ionization fractions for various species using results of all simulations and generate comparisons to observations of the CGM.	Resources: Rhea Node hours: 100k Filesystem storage (TB and dates): 200 TB scratch, 1/19 - 12/19 Archival storage (TB and dates): N/A Software Application: Python analysis scripts Tasks: Generate observables from simulation data in post-processing Dependencies: RM.A, RM.B	7/19 - 12/19	N/A