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:** Summit **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