Visualizing the Creation of Molecules From A Supernova Explosion In The Early Universe

Brandon Wiggins, Southern Utah University & LANL CCS-2

Thursday, October 18, 2018
1:00 pm - 2:00 pm
CNLS Conference Room (03-1690-102)
Contact Jonas Lippuner (jlippuner@lanl.gov) if you would like to meet with the speaker

Abstract:
We have recently implemented a fully-implicit molecular network from Omukai et al. (2008) into Grackle, a cooling library for cosmological simulations. Our network evolves 26 additional species and is coupled to metal feedback from star formation and is evolved inline with hydrodynamics in Enzo. The network is valid in low-metallicity regimes and could provide insight into the production of simple molecules during the era of first metal enrichment. I'll present the first results of this chemical reaction network in the context of a single supernova before examining more complex scenarios with state-of-the-art visualizations created in Paraview. I'll also share experiences and lessons I've gleaned in collaborating with Francesca Samsel, a renowned scientific dataset visualizer, whose work has allowed us to dramatically tell the story of the creation of molecules in the early universe.