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Examining the Rayleigh-Taylor instability in GRB outflow using wavelets MATTHEW ANDERSON, JACKSON DEBUHR, Indiana University - Bloomington, DAVID NEILSEN, Brigham Young University, BO ZHANG, Indiana University - Bloomington — In the gamma ray burst afterglow model, a relativistic shell forms which is unstable to the Rayleigh-Taylor instability during the formation of a relativistic blastwave. This instability is likely observable, and understanding the resulting turbulence have motivated many previous studies into the Rayleigh-Taylor instability in the context of a relativistic fireball. We study the Rayleigh-Taylor instability in a relativistic gamma ray burst outflow with and without magnetic fields. We also examine the growth of the magnetic fields with different Lorentz factors. The simulations are performed using a wavelet based adaptive mesh refinement method.

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