Initial Conditions for Cosmic Evolution Using GRMHD Equations DAVID GARRISON, CINDI BALLARD, JOHN HAMILTON, University of Houston Clear Lake — Numerically evolving the early universe after the inflationary expansion period requires a method of handling the Smoothness problem. Through the use of GRMHD turbulence it should be possible to show that structure formation can occur without violating the Smoothness condition or introducing concepts such as Imperceptibly Unsmooth Smoothness or Quantum Vacuum Energy Fluctuations. An attempt to solve Einstein's equations coupled with the equations of General Relativistic Magnetohydrodynamics for a smooth plasma is being made at the University of Houston Clear Lake. The challenge of this work is to identify the initial conditions for the standard model that lead to the development of the observed mass concentration in clusters and super clusters of galaxies. The initial conditions were selected so that alignment with observed values of the spectrum and isotropy of the cosmic background radiation are preserved as one evolves forward in time. This work presents the derivation of the initial conditions as well as the assumptions leading to them.

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