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Utilizing a GRMHD Code to Determine the Gravitational Radiation from Primordial Turbulence DAVID GARRISON, UH Clear Lake — In this talk I will show how a GRMHD code can be used to calculate the spectrum of gravitational waves (GWs) produced by turbulence in the early universe. Calculations involving a numerical relativity code should result in a more accurate GW spectrum than other techniques because they allow us to better simulate the conditions of the early universe. Previous calculations of GWs produced by turbulence did not involve compressible fluids or the effects of a dark matter field, a GRMHD simulation can. Also, very little is understood about the turbulent dynamics of a relativistic plasma that may contain supersonic shocks. These can most effectively studied through direct numerical simulation. As a result, the GW spectrum calculated from a GRMHD code may show a much larger deviations from the Kolmogorov Spectrum than has been previously predicted.

David Garrison
UH Clear Lake

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