Abstract Submitted
for the SES10 Meeting of
The American Physical Society

Magnetized Equilibrium Accretion Tori around Kerr Black Holes in General Relativistic Magneto-hydrodynamic Simulations[1] TYLER LANDIS, PETER DIENER, ERIK SCHNETTER, Department of Physics and Astronomy, Louisiana State University, BURKHARD ZINK, Theoretische Astrophysik, Eberhard-Karls-Universität Tübingen — Accretion onto black holes is one of the most likely candidates for generating many of the high energy events observed in our universe, which include gamma ray bursts, active galactic nuclei, and X-ray binaries. Key to this process is the formation and dynamics of magnetized accretion disks. We have developed a general relativistic magnetohydrodynamics code for studying such black hole accretion systems in global three dimensional simulations. This gives us the ability to study the non-axisymmetric instabilities of these systems that arise from the nonlinearity of the governing equations. Here, I will present recent results from simulations of a magnetized torus in equilibrium around a black hole on fixed spacetime backgrounds and give preliminary results studying the non-axisymmetric instabilities of the system.

[1]Supported by NSF grants DGE-0504507 and OCI-0905046 and TeraGrid Allocation TG-MCA02N014.

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Date submitted: 17 Aug 2010 Electronic form version 1.4