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Effect of Magnetic Field on Dynamical Instability of Neutron Stars**Roberto De Pietri, Parma University, Italy**Nicholson Hall 262
December 04, 2012 - 12:10 pm**Abstract:**

I will present results on the effect of magnetic field on the dynamics of the classical bar-mode instability of differentially rotating relativistic star models. In particular, I will show what happens to a seed purely poloidal Magnetic field super-imposed to matter unstable-equilibrium configuration and on its fate during the matter-unstable phase. We observed the growth of a toroidal magnetic field that rapidly overcomes the original poloidal field as a consequence of Magneto Rotational effects. The growth, of almost an order of magnitude, of the poloidal component during the unstable phase is observed.

Overall, we find that magnetic field seems to have a low effect on the dynamical bar-mode deformation for fields as big as 1015 Gauss while magnetic fields of order 1016 Gauss suppress the purely hydrodynamical instabilities. The results are obtained performing full 3D Ideal Magneto-hydrodynamics simulation in full General Relativity on a time scale of around 40 ms.

Speaker's Bio:

N/A

