

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Turbulent Dynamos and a non Turblent Dynamo Experiment,**  
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The liquid sodium  $\alpha\omega$  dynamo experiment is designed to demonstrate how magnetic fields are generated in AGN and stars. Turbulence is strongly constrained by the stability of Couette flow and by the short transient time of driven plumes. Similarly we expect low turbulent large scale  $\alpha\omega$  dynamos in MBH accretion disks and in stars where diffusive transport of magnetic flux by turbulence is much less than the advected magnetic flux, thus avoiding a common problem with unconstrained shear flows. Kinematic exponential growth of magnetic field has been predicted to occur in the presence of random or chaotic three dimensional or turbulent motions of a highly conducting fluid. We predict that no dynamo growth can occur in unconstrained shear flows because of the irreversible nature of turbulence and hence the enhanced dissipation of magnetic flux or reduced magnetic Reynolds number. Analytic formulations suffer from the time reversible invariance of the equations and hence no change in entropy.

<sup>1</sup>Univ. Cal., LANL, and NMIMT are gratefully acknowledged.

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Date submitted: 31 Jul 2006

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