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**An Experiment to Demonstrate an  $\alpha\omega$  Dynamo in the Accretion Disk leading to Galaxy and MBH formation** JIAHE SI, New Mexico Institute of Mining and Technology, STIRLING COLGATE, HUI LI, VLADIMIR PARIEV, Los Alamos National Lab, DAVID WESTPFAHL, JOE MARTINIC, New Mexico Institute of Mining and Technology — The largest concentrations of free energy in the universe are the radio lobes associated with the central galactic black hole formation, in form of magnetic energy,  $\sim 10^{62}$  ergs of  $B^2/8\pi$ ,  $\sim 10\%$  of MBH  $c^2$ . It's generally believed that the magnetic fields are amplified from very weak seed fields by the interaction of electrically conducting fluid motion, the so-called dynamo mechanism. Turbulence inhibits a dynamo, which must have coherence and phase information (Cattaneo and Tobias) in Baryon-dominated hydrodynamics. We are attempting an experiment to demonstrate an  $\alpha\omega$  dynamo in New Mexico Institute of Mining and Technology with liquid sodium in limiting stable Couette flow between two co-rotating cylinders,  $\Omega_1 = 17.5\text{Hz}$  and  $\Omega_2 = 70\text{Hz}$ , 60cm and 30cm in diameter. The Helicity is produced by driven plumes analogous to star-disk collisions in the astrophysical limit. Including signals from 18 Hall detectors, 5 pressure and 5 temperature sensors in rotating frame, 2 rotation speed, 2 current, 2 torque sensors, and other sensors in stationary to monitor the experimental apparatus operation, there are more than 45 signals must be digitized and transmitted in serial, and finally decoded in data acquisition computer to characterize the experiment.

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