Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Gravity Damping in Neutron Star Magnetospheres STEVEN BEKHOR, Michigan Plasma Physics Research Institute — It was shown previously by Khabibrakhmanov and Mullan that a mechanism whereby Alfvén waves dissipate energy in gravitationally structured media via Joule heating may account for solar coronal heating and wind driving. In particular, "gravity damping" was shown to preferentially heat heavy ions and produce temperature anisotropies ($T_\perp > T_{||}$), features that have long been known to exist in the solar wind and low corona. We present the results of preliminary asymptotic and numerical studies that extend this phenomenon to general relativistic regimes. In particular, the dynamics of ubiquitous, virtually undamped gravitational waves that radiate from neutron stars are examined using a multi-fluid description of the outer magnetosphere medium in the Newtonian limit of General Relativity as well as in the 3+1 split formalism. It is thought that gravitational waves are driven by oscillations within the superfluid interior and, therefore, may provide a very important source of energy for magnetospheric acceleration processes. Future results will ultimately be compared to realistic spectra from LIGO and VIRGO.

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Date submitted: 03 Jan 2008 Electronic form version 1.4