Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Experimental observation of steady inertial wave turbulence in deep rotating flows[1] EHUD YAROM, ERAN SHARON, Hebrew Univ of Jerusalem — We present experimental evidence of inertial wave turbulence in deep rotating fluid. Experiments were performed in a rotating cylindrical water tank, where previous work showed statistics similar to 2D turbulence (specifically an inverse energy cascade). Using Fourier analysis of high resolution data in both space (3D) and time we show that most of the energy of a steady state flow is contained around the inertial wave dispersion relation. The nonlinear interaction between the waves is manifested by the widening of the time spectrum around the dispersion relation. We show that as the Rossby number increases so does the spectrum width, with a strong dependence on wave number. Our results suggest that in some parameters range, rotating turbulence velocity field can be represented as a field of interacting waves (wave turbulence). Such formalism may provide a better understanding of the flow statistics.

[1]This work was supported by the Israel Science Foundation, Grant No. 81/12

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Date submitted: 19 Jul 2015 Electronic form version 1.4