1062-86-7 **Ahmed Ahmed kaffel*** (`kaffel07@gmail.com`), 1404 j university city blvd, Blacksburg, VA 24060. *Barotropic instability in Geophysical Fluid Dynamics.* Preliminary report.

The beta effect on the barotropic instability of parallel shear flows are investigated through a linear stability analysis. We focus on the primitive equations model of the geophysical fluid dynamics to study the beta effect on the instability of a few classes of simple parallel flows particularly for the plane Poiseuille and Couette flows and for the hyperbolic-tangent shear layer and the Bickley jet flows. The Rayleigh stability equation is derived and solved numerically using the spectral Chebyshev collocation method. This algorithm is computationally efficient and accurate in reproducing the eigenvalues. In the inviscid case all the Plane Poiseuille and Couette flows we study are stable. In the case of the shear layer and Bickley jet flows, there are instabilities. In these cases, the effect of the number beta is to reduce and ultimately suppress the inviscid instability. 1 (Received May 09, 2010)