

Supplementary Material

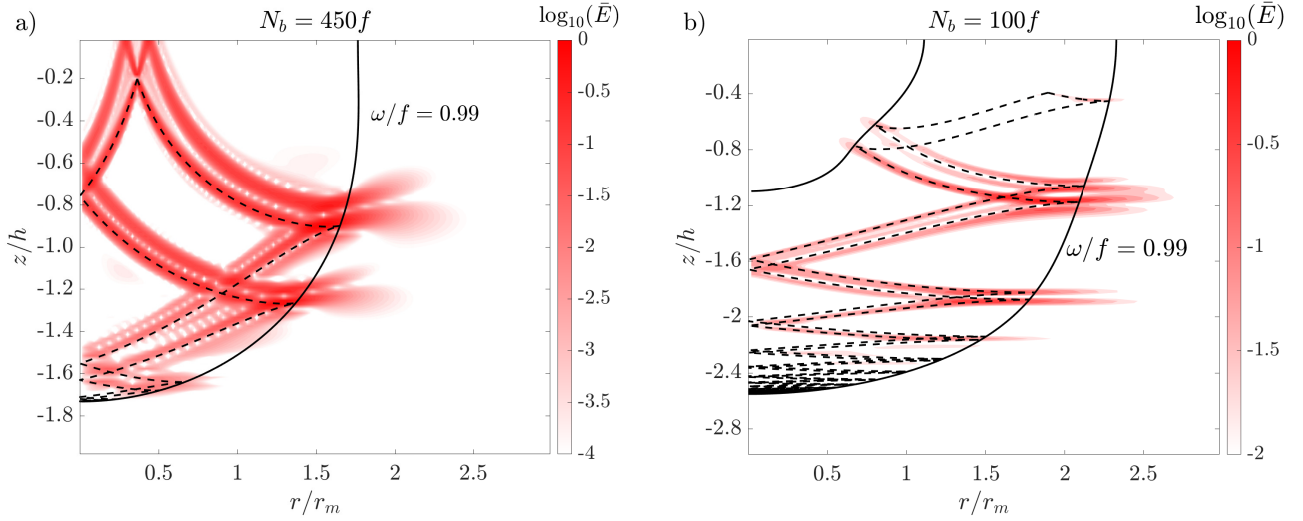


Figure S1: Numerical results of the anticyclonic core vortices: Contour plots of the logarithm of normalized energy density ($\log_{10}(\bar{E})$) for two curvature numbers $Cu_b = -0.2$ and -6.67 , and for the NIW frequency $\omega = 0.99f$. The dashed and continuous black curves indicate ray-paths and wave propagation boundary, respectively.

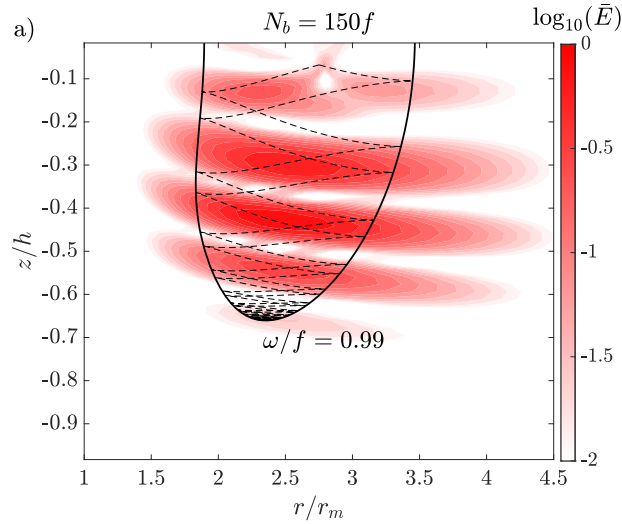


Figure S2: Numerical results of the cyclonic core vortex: Contour plots of the logarithm of normalized energy density ($\log_{10}(\bar{E})$) for curvature number $Cu_b = 2$, and for the NIW frequency $\omega = 0.99f$. The dashed and continuous black curves indicate ray-paths and wave propagation boundary, respectively.