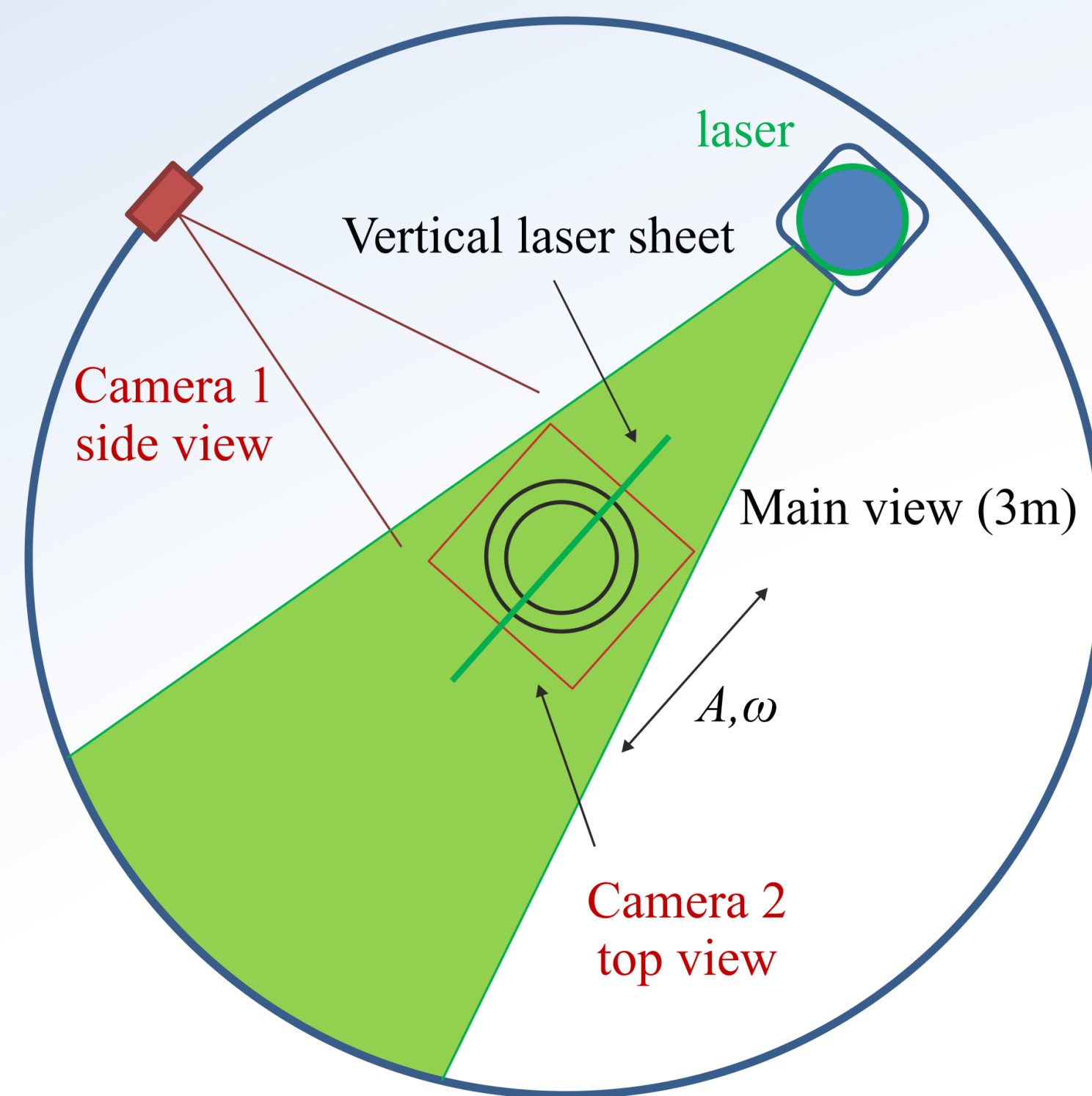
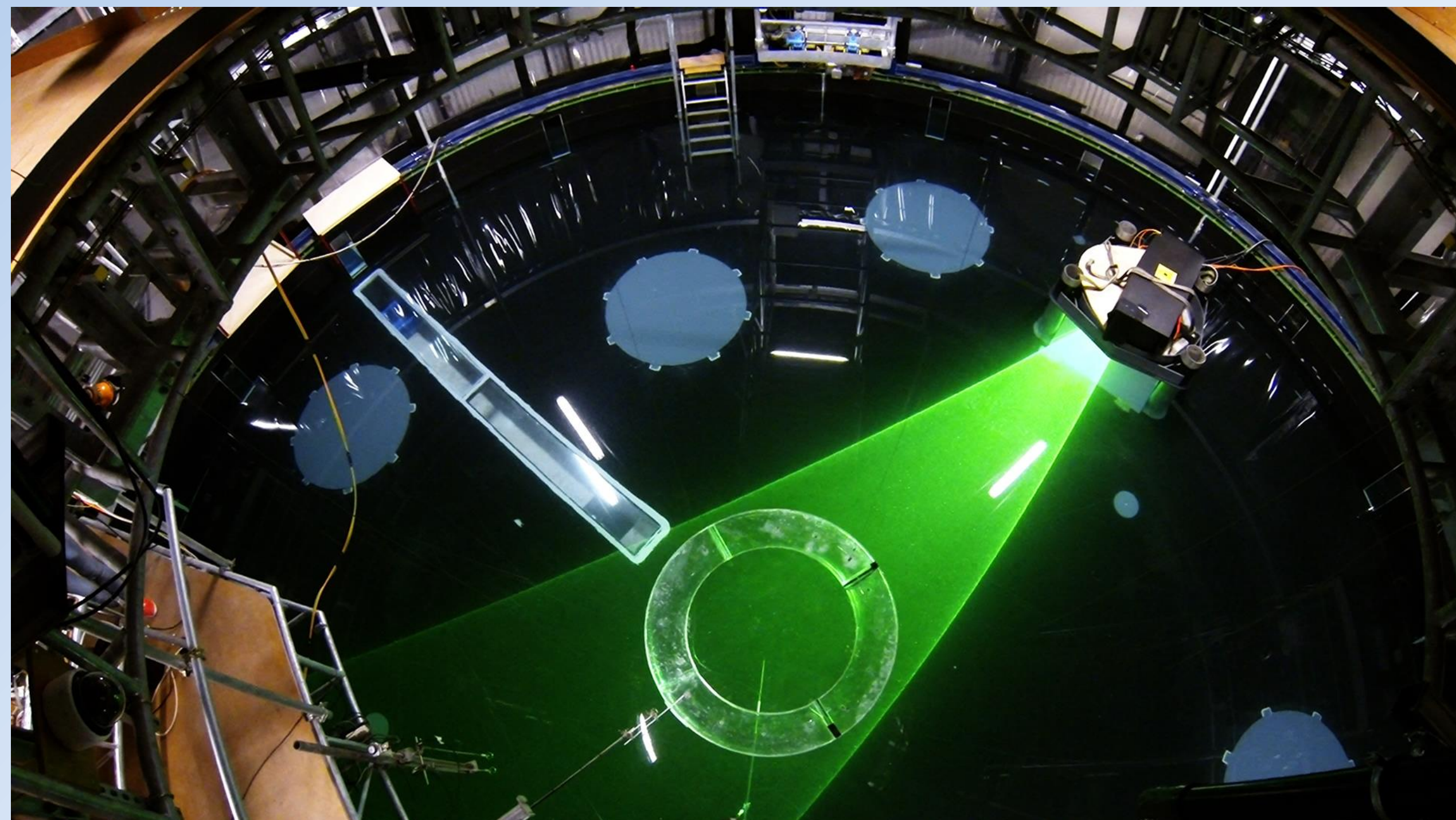
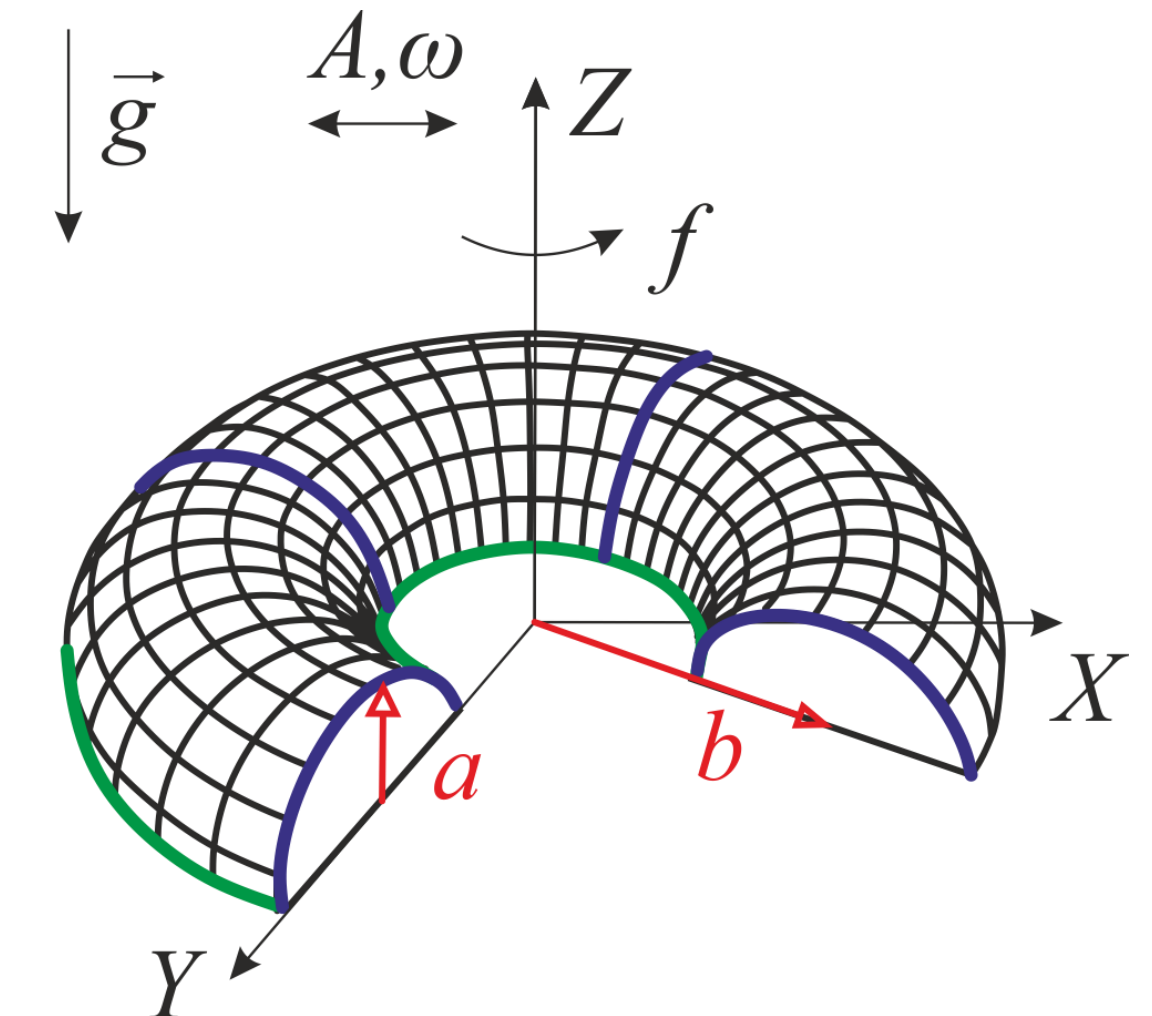


High Stokes number wave focusing by a circular ridge: internal, inertial and inertia–gravity waves

N. Shmakova, J.-B. Flór, S. Viboud, J. Sommeria & B. Voisin



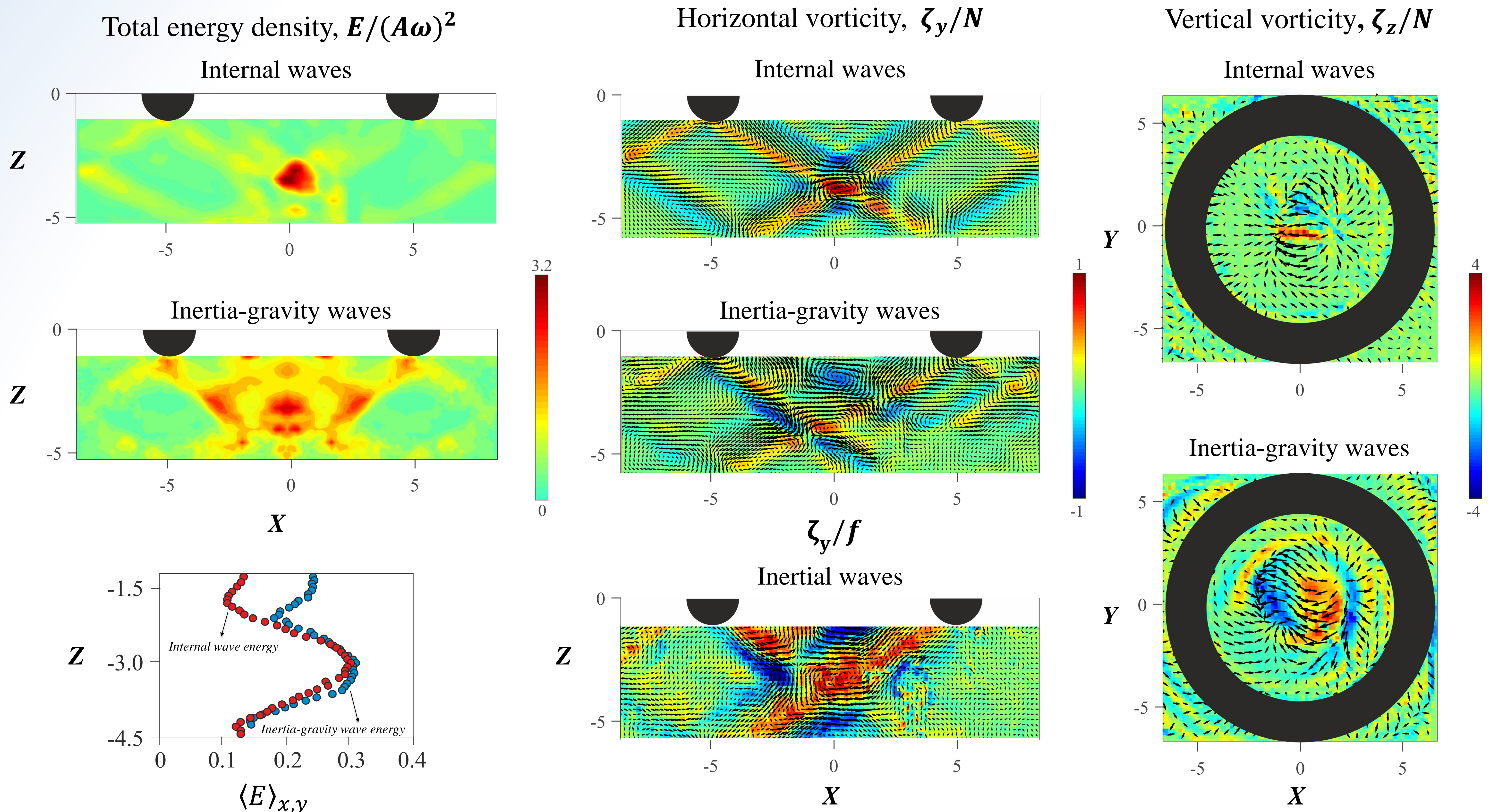
Wave focusing can be considered as a possible scenario for energy concentration in localized zones representing hot spots for incipient overturning in the oceans



Experiments at the Coriolis platform:

- Large scale $a = 15\text{cm}, b = 75\text{cm}$
- Large Stokes (bimodal beams) $3800 < St < 6800$
- Low oscillation amplitude $A/a = 0.17$
- Stratified and rotating fluids
- Volume PIV measurements

What are the effects of stratification and rotation?



Observations:

- [Effect of stratification](#)
- [Effect of stratification and rotation](#)
- [Effect of rotation](#)

Focusing in a localized zone where nonlinear effects lead to dipolar vortex motion
 Increased wave activity over the entire depth with several overturning regions and a « Yin-Yang-like » vortex
 Vertical distribution of horizontally averaged kinetic energy
 Wave breaking leading to the redistribution of angular momentum, with cyclonic and anticyclonic vortex motions (Duran-Matute et al., Phys. Rev. E 2013)