TIDAL DYNAMOS IN STRATIFIED FLUIDS

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Brunt-Väisälä frequency N

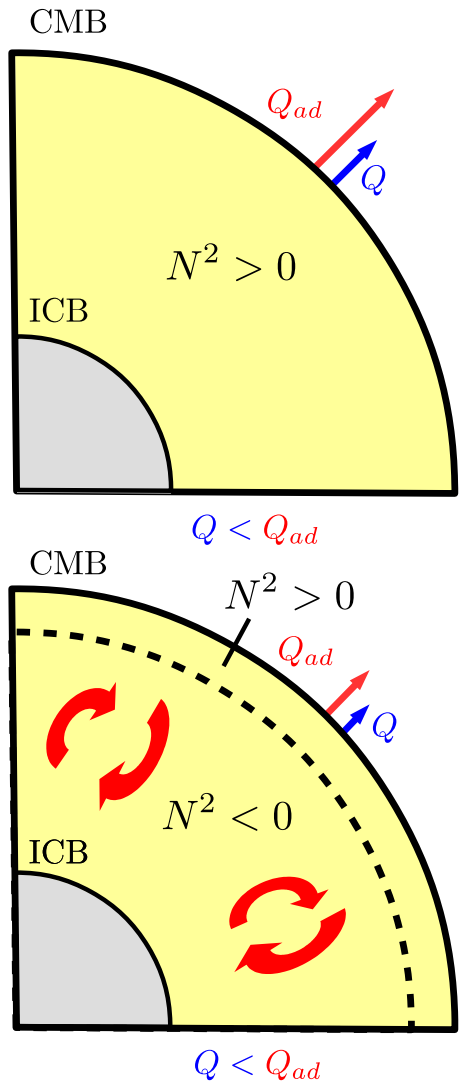
$$N^2 = -\frac{\alpha(\nabla T - \nabla T_{ad})}{\rho} \cdot \mathbf{g} \propto Q_{ad} - Q$$

- $N^2 > 0$: **stably** stratified,
- $N^2 < 0$: **unstably** stratified.

Geophysical and astrophysical contexts

- Pozzo et al. (2012), de Koker et al. (2012), Ohta et al. (2016): **higher** estimates of Q_{ad}...
- Is the Earth's core even **fully convecting**? (Andrault et al., 2016)
- **Stars** between 3 and 10 M_S: fully **radiative**.

What about **dynamos**?



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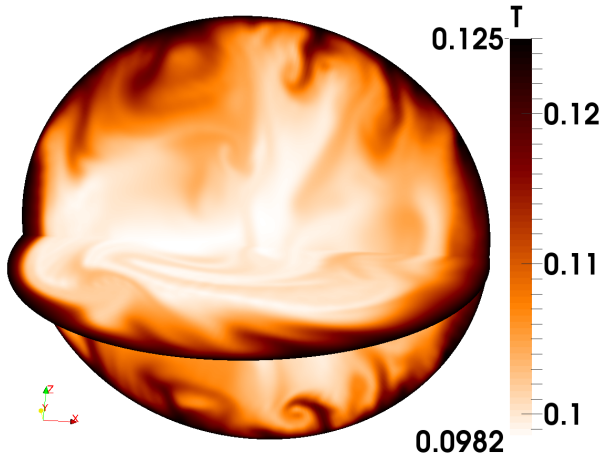
1. Turbulent flows in stratified fluids

- **Erosion** and **mixing** when $N \leq \mathcal{O}(\Omega)$,
- No radial mixing when $\Omega \ll N$.

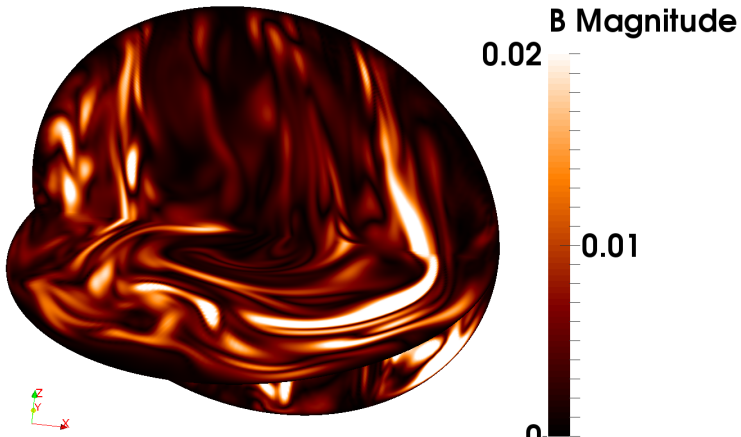


$N = 0.5\,\Omega$

2. Dynamos in stratified fluids

- $Rm \gtrsim 730$ & $Pm \gtrsim 1$.

Come to my poster for further details!



$N = 0.5\,\Omega$