Fluid response to the inner core's translational oscillations

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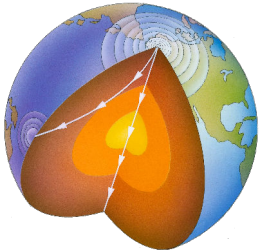
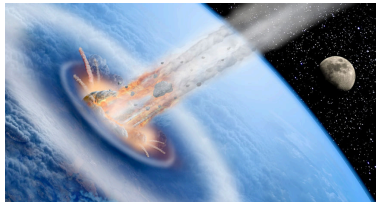
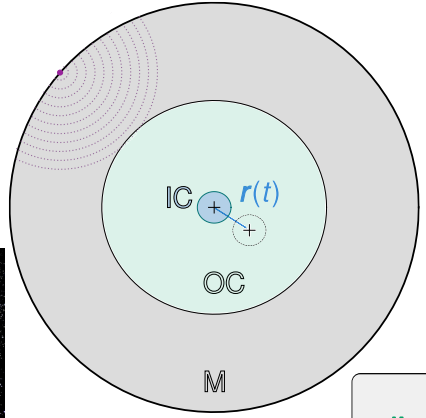
Strong earthquakes



impact events



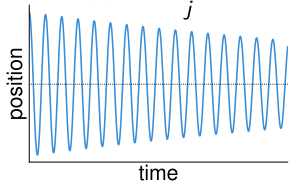
can displace the **inner core**



→ **translational oscillations**

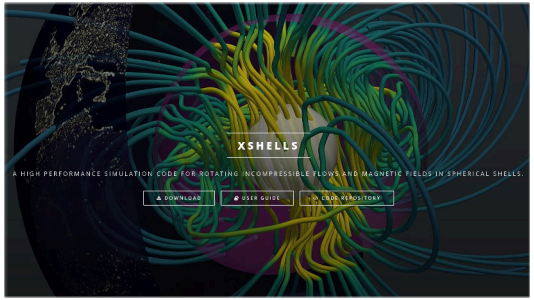
the **inner core** center of mass $\boldsymbol{r}(t)$ follows Newton's 2nd law:

$$m_{\mathrm{ic}} \frac{\mathrm{d}^2 \boldsymbol{r}}{\mathrm{d}t^2} = \sum_j \mathbf{F}_j$$



Known **oscillation period**, but unclear **dissipation mechanisms** and their **magnitude**

We study **viscous and magnetic dissipation mechanism** through **non-linear simulations** of the **outer core fluid** response.



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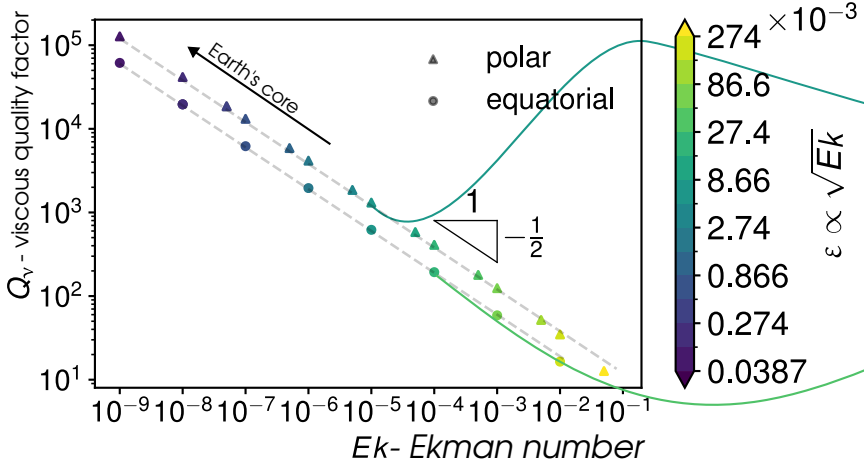
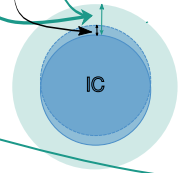
Viscous dissipation

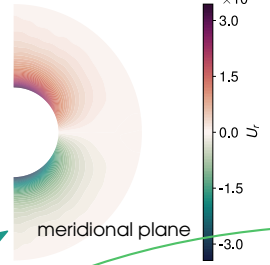
Oscillations inside the viscous boundary layer: $\delta < \delta_{\nu\ bl} \propto \sqrt{Ek}$



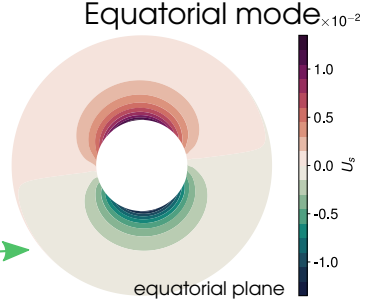


Sphere oscillating in a viscous fluid.

Polar mode



Equatorial mode



Visit the **poster** to discover further details on **methods** and **results**, e.g. effect of the ↓**magnetic field** & ↓**oscillation frequency** & **inner core radius**↓