

Polarity reversals in a geodynamo model with a stably-stratified layer

Nicolás P. Müller¹, F. Pétrélis¹, C. Gissinger^{1,2}

¹LPENS, Ecole Normale Supérieure, Université PSL, CNRS, Paris, France

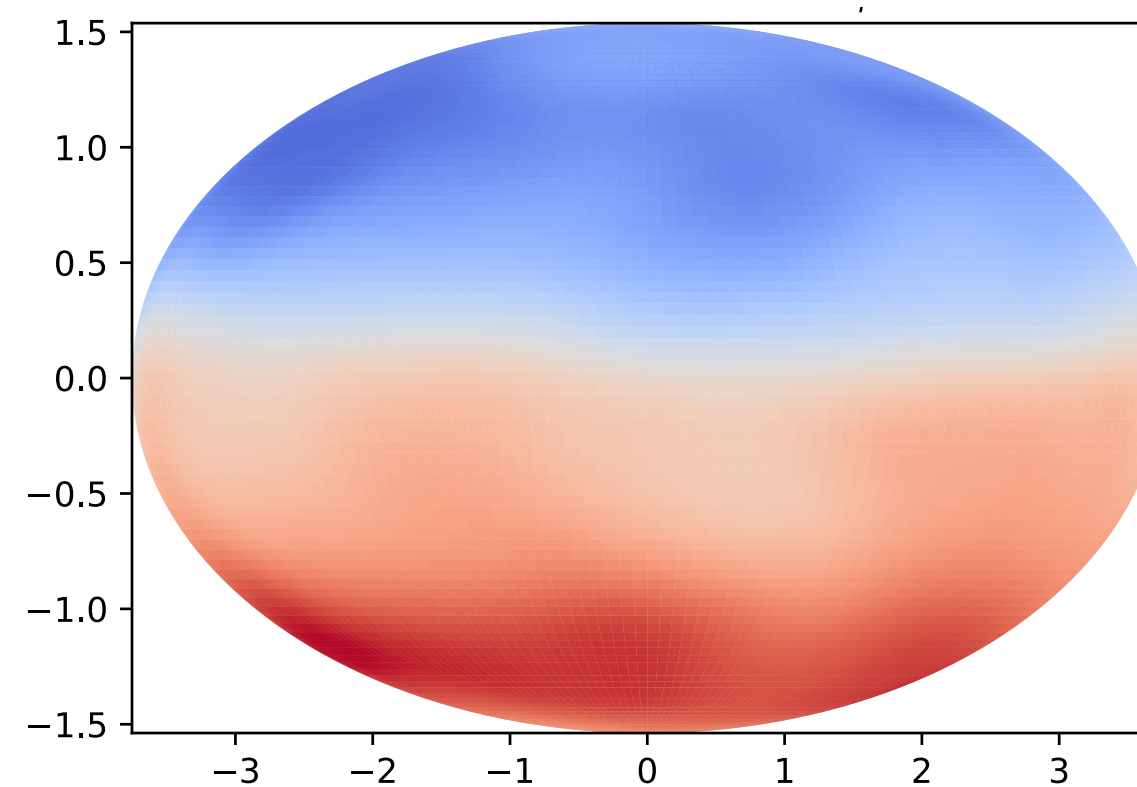
²Institut Universitaire de France (IUF), Paris, France

Introduction of thin stably-stratified layer close to the outer core

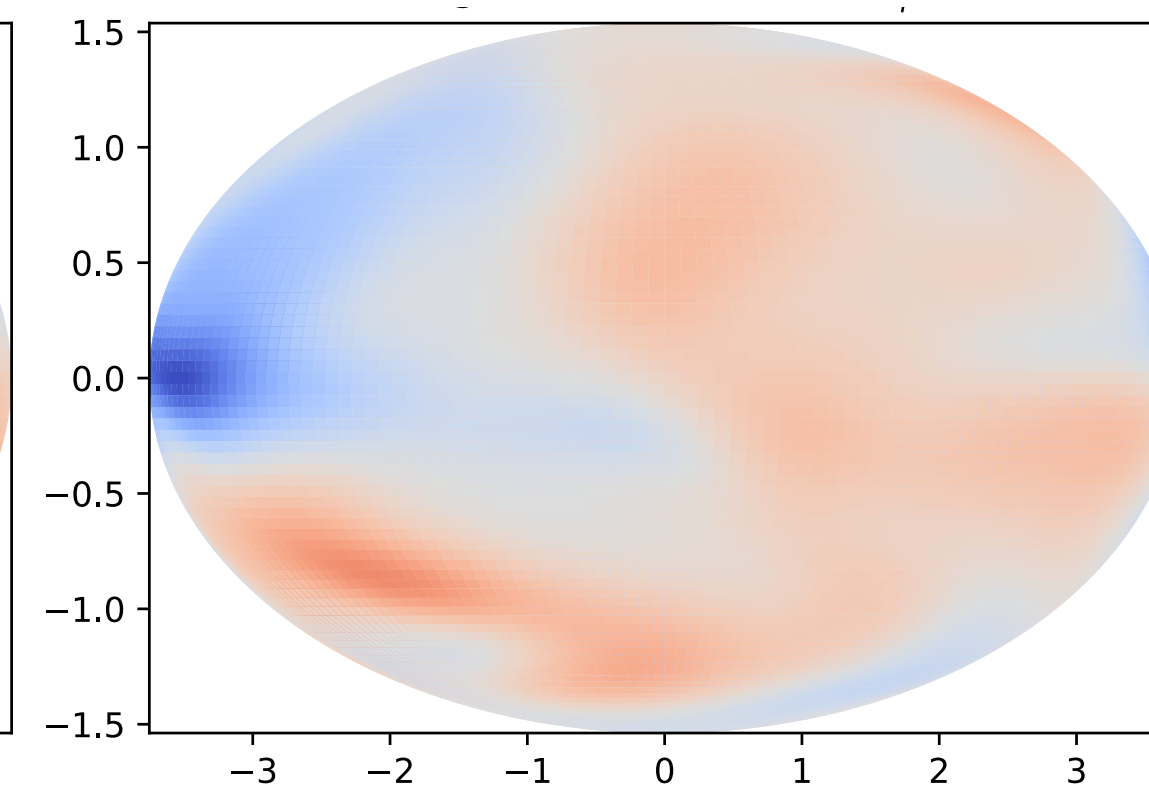
$$\frac{\partial \mathbf{u}}{\partial t} + \mathbf{u} \cdot \nabla \mathbf{u} = -\nabla p + \nu \Delta \mathbf{u} - 2\Omega \hat{z} \times \mathbf{u} + \alpha g T \hat{r} + \frac{1}{\rho \mu} (\nabla \times \mathbf{B}) \times \mathbf{B}$$

Radial magnetic field B_r at the outer core r_o

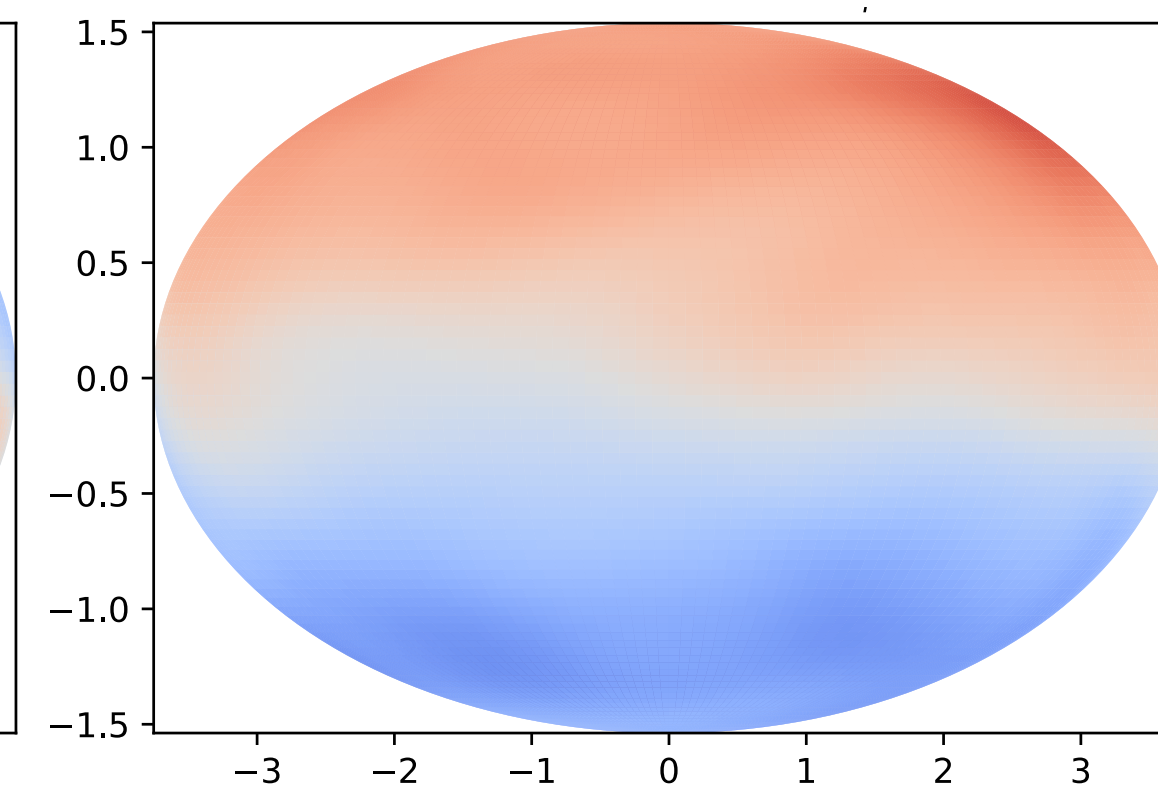
Before the reversal



During the reversal



After the reversal



- Magnetic field reversals with a stably-stratified layer
- Strong dipolar structure before and after reconnection

