Relation de Fluctuation en

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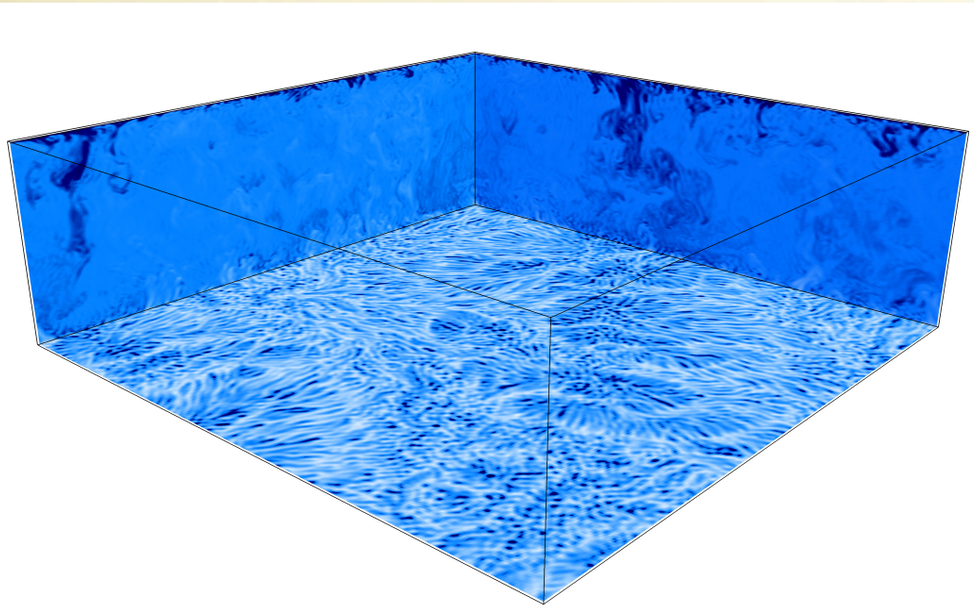
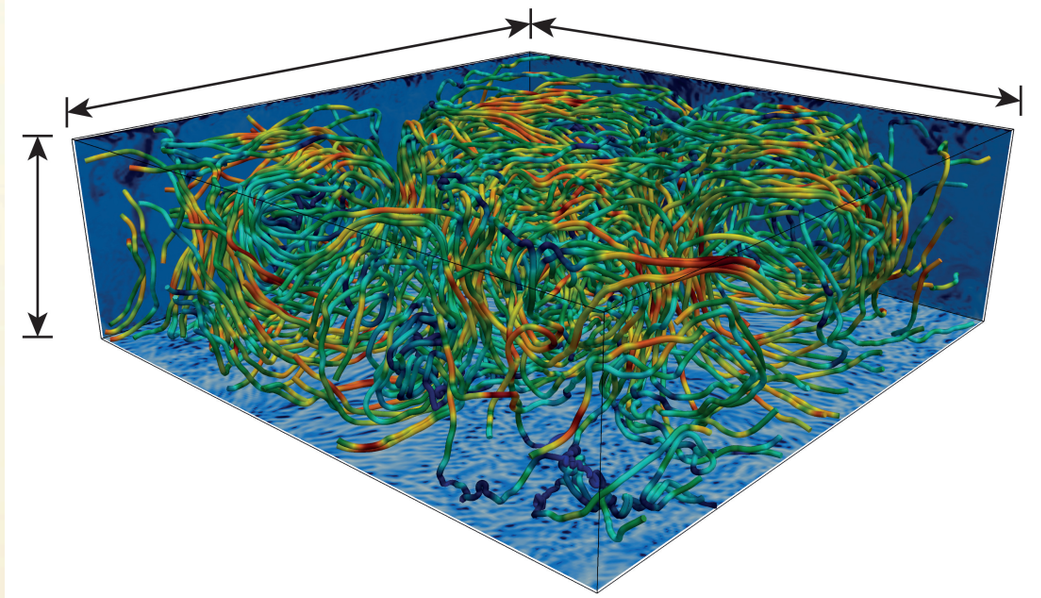
Turbulent convection





$$
\begin{aligned}
\frac{\partial u_i}{\partial x_i} &= 0, \\
\frac{\partial u_i}{\partial t} + u_j \frac{\partial u_i}{\partial x_j} &= -\frac{\partial P}{\partial x_i} + 4\sqrt{\frac{Pr}{Ra}} \frac{\partial^2 u_i}{\partial x_j^2} - \delta_{i,3}\theta \\
\frac{\partial \theta}{\partial t} + u_j \frac{\partial \theta}{\partial x_j} &= +\frac{4}{\sqrt{PrRa}} \frac{\partial^2 \theta}{\partial x_j^2},
\end{aligned}
$$

$$
\dot{\mathbf{x}}_p = \mathbf{u}\left(\mathbf{x_p}(t), t\right) \qquad \theta_p = \theta\left(\mathbf{x_p}(t), t\right)
$$

Relation de Fluctuation

Fluctuation Relation (FR)

$$\log \frac{\Pi(\beta W_t = p)}{\Pi(\beta W_t = -p)} = tp$$