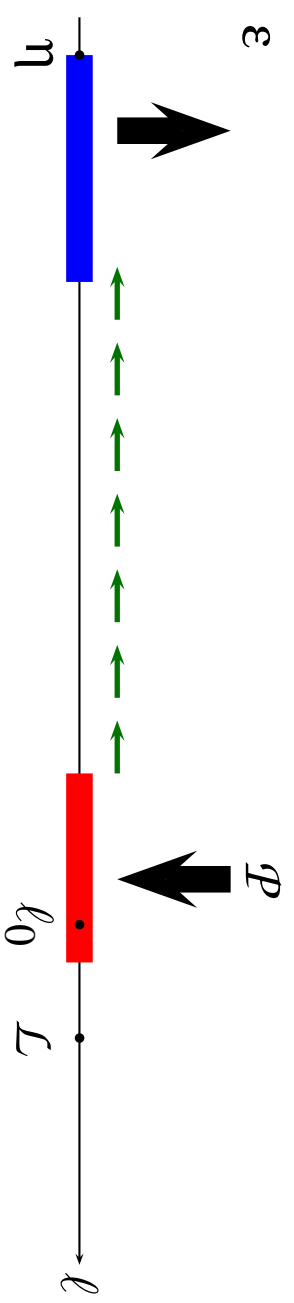
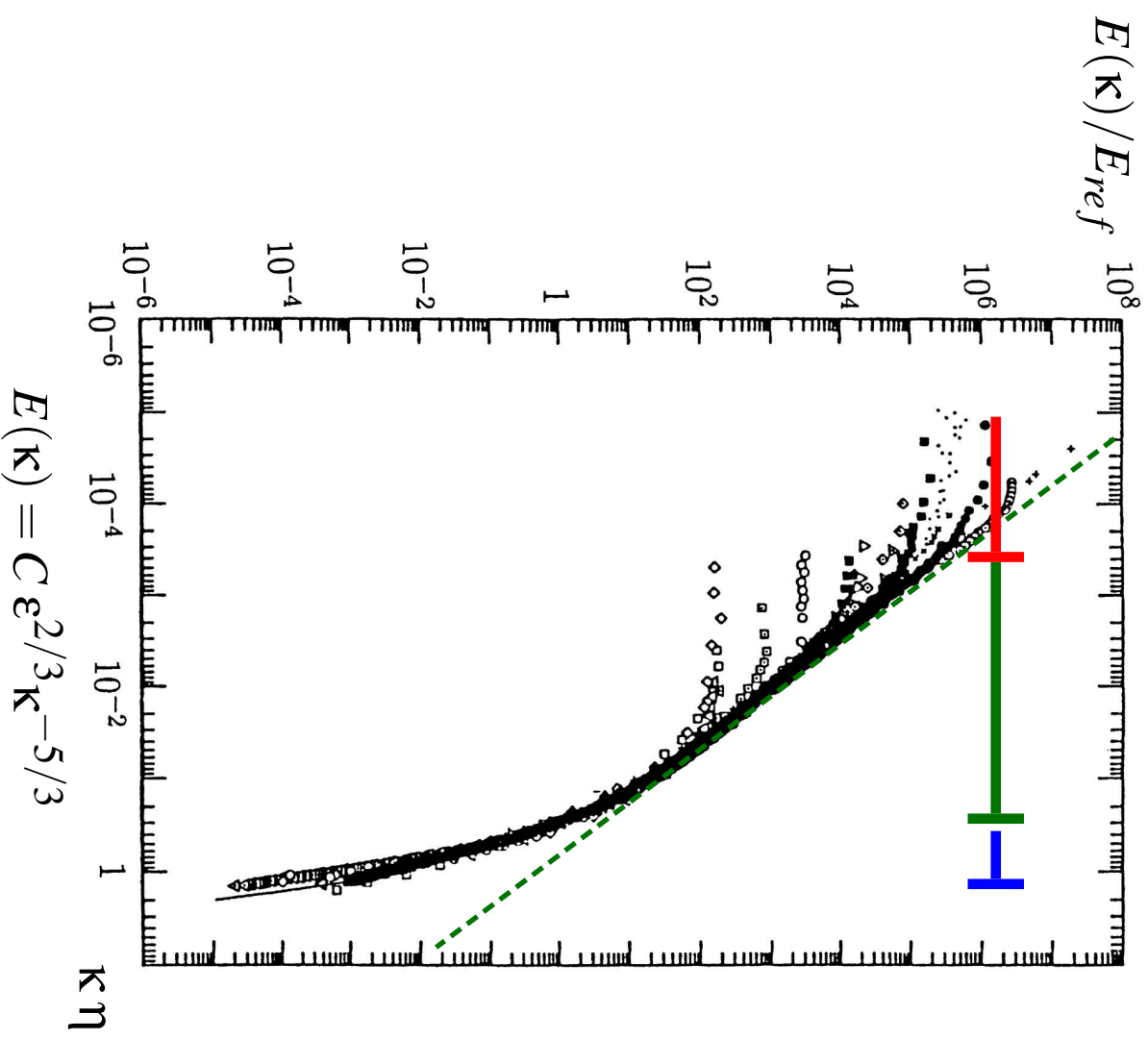


# Kolmogorov cascade



$$\eta \equiv \left( \frac{\nu^3}{\mathcal{E}} \right)^{1/4}, \quad u_\eta \equiv (\nu \mathcal{E})^{1/4}, \quad \tau_\eta = \left( \frac{\nu}{\mathcal{E}} \right)^{1/2}$$

In the inertial subrange :  $u(\ell) = (\mathcal{E} \ell)^{1/3} = u_\eta (\ell/\eta)^{1/3}$        $\tau(\ell) = (\ell^2/\mathcal{E})^{1/3} = \tau_\eta (\ell/\eta)^{2/3}$



$$\varepsilon \approx \frac{w_0^2}{\tau_0} = \frac{w_0^2}{\ell_0/w_0}$$

$$\eta = \left( \frac{v^3}{\varepsilon} \right)^{1/4} \approx \left( \frac{v^3 \ell_0}{w_0^3} \right)^{1/4} \approx Re^{-3/4} \ell_0$$