$$\frac{\partial u}{\partial t} + u \cdot \nabla u = -\nabla p/\rho + \nu \nabla^2 u + f \nabla \cdot u = 0$$

(1)

u
p
ν
f
$2\pi\times$
$2\pi\times$
2π

$$\frac{u_i^{n+1} - u_i^n}{\Delta t} = \frac{3}{2}T(u_i^n) - \frac{1}{2}T(u_i^{n-1}) - \frac{1}{\rho}\frac{\partial p^{n+1}}{\partial x_i}$$

(2)

$$T(u_i^n) = -u_j^n \frac{\partial u_i^n}{\partial x_j} + \nu \frac{\partial^2 u_i^n}{\partial x_j \partial x_j}$$

(3)

$u^* p^n$

$$\frac{u_i^* - u_i^n}{\Delta t} = \frac{3}{2}T(u_i^n) - \frac{1}{2}T(u_i^{n-1})$$

(4)

p^{n+1}

$$\nabla^2 p^{n+1} = \frac{\rho \nabla \cdot u^*}{\Delta t}$$

(5)

u_i^{n+1}

$$u_i^{n+1} - u^* = -\Delta t \frac{\partial p^{n+1}}{\partial x_i}$$

(6)

$_numerical_1 981 \hat{u}(k) = \frac{1}{k\sqrt{k_1^2+k_2^2}} \begin{pmatrix} \alpha(k) k k_2 + \beta(k) k_1 k_3 \\ -\alpha(k) k k_1 + \beta(k) k_2 k_3 \\ -\beta(k)(k_1^2 + k_2^2) \end{pmatrix}$ (7) $k = \sqrt{k_1^2 + k_2^2 + k_3^2}$

$\alpha(k) = \sqrt{\frac{E(k)}{4\pi k^2}} \exp i\theta_1 \cos\phi$

$\beta(k) = \sqrt{\frac{E(k)}{4\pi k^2}} \exp i\theta_2 \cos\phi$

$\theta_1 \theta_2 \phi 2\pi E(k)$

$_deterministic_1 994 E(k) = \frac{q^2}{2A}\frac{k_p}{k_p^{\sigma+1}} \exp(-\frac{\sigma}{2}\frac{k}{k_p}^2)$ (8)

$_predictability_1 997 \hat{f} = \begin{cases} \frac{\varepsilon}{2E_f} u(\hat{k}), if 0 < k < k_f \\ 0, otherwise \end{cases}$ (9) $\sim \frac{\varepsilon}{2E_f} = 0.5$

$_linearly_2 003, rosales_linear_2 005, \hat{f} = \frac{\varepsilon}{2E}\hat{u}$ (10) $\frac{\varepsilon}{2E}$

$E = \frac{1}{2}\langle u \cdot u \rangle = \frac{3}{2}u'^2 = \int_0^{k_{max}} E(k) dk$

$\varepsilon = 2\nu \int_0^{k_{max}} k^2 E(k) dk$

$L = \frac{\pi}{2u'^2} \int_0^{k_{max}} k^{-1} E(k) dk$

$\lambda = (\frac{15\nu u'^2}{\varepsilon})^{1/2}$

$\eta = (\frac{\nu^3}{\varepsilon})^{1/4}$

$T = L/u'$

$\tau_\eta = (\frac{\nu}{\varepsilon})^{1/2}$

$Re_\lambda = \frac{u'\lambda}{\nu}$

$a = \frac{\varepsilon L}{u'^3}$

$u = U + u'$
$U_1 = 0$
$U_2 = S x_1$
$U_3 = 0$

$$\frac{\partial u'}{\partial t} + S x_1 \frac{\partial u_i'}{\partial x_2} + S \delta_{i2} u_1' + u_j' \frac{\partial u_i'}{\partial x_j} = -\frac{1}{\rho}\frac{\partial p}{\partial x_i} + \nu \frac{\partial^2 u_i'}{\partial x_j \partial x_j} \frac{\partial u_i'}{\partial x_i} = 0$$

(11)

u'