DESCRIPTION

BHS

$$unsteady-stocks-2D$$
$$\mathbf{v}_t-\alpha\nabla^2\mathbf{v}+\nabla p=\mathbf{f},\quad in\quad \mathbf{\Omega}_T$$
$$\nabla\cdot\mathbf{v}=0,\quad in\ \mathbf{\Omega}_T$$
$$\mathbf{v}|_{\partial\Omega}=0,\quad on\quad \partial\mathbf{\Omega}_T$$
$$\mathbf{v}|_{t=0}=\mathbf{v}_0,\quad on\quad \mathbf{\Omega}$$

$$\alpha=0.025$$
$$\mathbf{v}=[u_1(t,x_1,x_2),u_2(t,x_1,x_2)]$$
$$x_1\in[0,1],x_2\in[0,1],t\in[0,1]$$
$$u_1(t,x_1,x_2)=2sin(t)sin(\pi x_1)^2sin(\pi x_2)cos(\pi x_2)\pi$$
$$u_2(t,x_1,x_2)=-2sin(t)sin(\pi x_2)^2sin(\pi x_1)cos(\pi x_1)\pi$$
$$p(t,x_1,x_2)=sin(t)cos(\pi x_1)cos(\pi x_2)$$

References

[1] Jing Yue,Jian Li. The Physics Informed Neural Networks for the unsteady Stokes problems[J]. International Journal for Numerical Methods in Fluids.