TOROIDAL ROTATION

Equations of code:

$\vec{v}_{tor} = v^{\zeta}\hat{e}_{\zeta} \equiv$ equilibrium toroidal rotation

$$\frac{dX}{dt} = \frac{\partial X}{\partial t} + \vec{v}_{tor}\cdot\vec{\nabla}X$$

$$= \frac{\partial X}{\partial t} + v_{eq}^{\zeta}\hat{e}_{\zeta}\cdot\vec{\nabla}X = \frac{\partial X}{\partial t} + \frac{v_{eq}^{\zeta}}{R_0}\hat{e}_{\zeta}\cdot\frac{\partial X}{\partial \zeta}\hat{e}^{\zeta} = \frac{\partial X}{\partial t} + \frac{v_{eq}^{\zeta}}{R_0}\frac{\partial X}{\partial \zeta}$$

Normalization:

$$\frac{d\tilde{X}}{dt} = \frac{\partial \tilde{X}}{\partial t} + \varepsilon\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{X}}{\partial \zeta}$$

Inplementation:

call block0(vzt_eq,2,4,0,0,1,-1.0_IDP)

$$\frac{\partial \tilde{U}}{\partial t} = -\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{U}}{\partial \zeta}$$

call block0(vzt_eq,3,3,0,0,1,- 1.0_IDP)

$$\frac{\partial \tilde{p}}{\partial t} = -\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{p}}{\partial \zeta}$$

call block0(vzt_eq,5,5,0,0,1,- 1.0_IDP)

$$\frac{\partial \tilde{n}_f}{\partial t} = -\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{n}_f}{\partial \zeta}$$

call block0(vzt_eq,6,6,0,0,1,- 1.0_IDP)

$$\frac{\partial \tilde{v}_f}{\partial t} = -\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{v}_f}{\partial \zeta}$$

call block0(vzt_eq,8,8,0,0,1,- 1.0_IDP)

$$\frac{\partial \tilde{v}_{\|th}}{\partial t} = -\tilde{v}_{eq}^{\zeta}\frac{\partial \tilde{v}_{\|th}}{\partial \zeta}$$