True		**Z and D grid**	
Baroclinic modes: $\nu = \frac{-\beta k}{(k^2+\ell^2)+\frac{f_0^2}{N^2}\left(m^2+\frac{1}{4H^2}\right)}$ $m \equiv \pi n / z_T$ for $n = 1, 2, 3, \ldots$	Barotropic modes: $\nu = \frac{-\beta k}{k^2+\ell^2}$	Baroclinic modes: $\nu = \frac{-\beta \widetilde{\xi} k}{(\xi^2 k^2+\eta^2 \ell^2)+\frac{f_0^2}{N^2}\left(m^2+\frac{1}{4H^2}\right)}$ $\xi \equiv \sin\left(\frac{1}{2}kd\right) / \left(\frac{1}{2}kd\right),\ \eta \equiv \sin\left(\frac{1}{2}\ell d\right) / \left(\frac{1}{2}\ell d\right),$ $\widetilde{\xi} \equiv \sin(kd) / (kd),\ 0 \le [kd, \ell d] \le \pi$	Barotropic modes: $\nu = \frac{-\beta \widetilde{\xi} k}{\xi^2 k^2+\eta^2 \ell^2}$
C grid		**E grid**	
Baroclinic modes: $\nu = \frac{-\mu^2 \widetilde{\xi} \beta k}{\xi^2 k^2+\eta^2 \ell^2+\frac{\mu^2 f_0^2}{N^2}\left(m^2+\frac{1}{4H^2}\right)}$ $\mu \equiv \cos\left(\frac{1}{2}kd\right)\cos\left(\frac{1}{2}\ell d\right)$	Barotropic modes: $\nu = \frac{-\mu^2 \widetilde{\xi} \beta k}{\xi^2 k^2+\eta^2 \ell^2}$	Baroclinic modes: Same as Z grid but for $0 \le [kd, \ell d] \le 2\pi$	Barotropic modes:
CD grid			
Baroclinic modes: $e^{2\nu_i \tau}\left(\mu^2 N^2 L^2 + f_0^2 \sigma_m^2\right)\sin(2\nu_r \tau) + \frac{1}{2}\tau e^{2\nu_i \tau}\mu^2 N^2 \beta \widetilde{\xi} k \cos(2\nu_r \tau)$ $+\tau e^{\nu_i \tau}\mu^2 N^2 \cos(\nu_r \tau)\beta \widetilde{\xi} k + 2 f_0^2 e^{\nu_i \tau}\left(\mu^2 - 1\right)\sigma_m^2 \sin(\nu_r \tau)$ $+\frac{1}{2}\tau \mu^2 N^2 \beta \widetilde{\xi} k = 0$ $e^{\nu_i \tau} = \left(-b + \sqrt{b^2 - 4ac}\right) / (2a)$ for a, b and c; see Eqs. (38a)–(38c)		Barotropic modes: $0 = \left[\left(L^2\right)^2 - \left(\frac{1}{2}\tau \beta \widetilde{\xi} k\right)^2\right]\sin(\nu_r \tau) + \tau \beta \widetilde{\xi} k L^2 \cos(\nu_r \tau)$ $e^{\nu_i \tau} = L^2 / \left[L^2 \cos(\nu_r \tau) - \frac{1}{2}\tau \beta \widetilde{\xi} k \sin(\nu_r \tau)\right]$ $L^2 \equiv \xi^2 k^2 + \eta^2 \ell^2,\ \sigma_m^2 \equiv m^2 + 1/\left(4H^2\right),\ 0 \le [kd, \ell d] \le \pi$	
A grid		**B grid**	
Baroclinic modes: $\nu = \frac{-\beta \widetilde{\xi} k}{\widetilde{\xi}^2 k^2+\widetilde{\eta}^2 \ell^2+\frac{f_0^2}{N^2}\left(m^2+\frac{1}{4H^2}\right)}$ $\widetilde{\eta} \equiv \sin(\ell d) / (\ell d),\ 0 \le [kd, \ell d] \le \pi$	Barotropic modes: $\nu = \frac{-\beta \widetilde{\xi} k}{\widetilde{\xi}^2 k^2+\widetilde{\eta}^2 \ell^2}$	Baroclinic modes: $\nu = \frac{-\widetilde{\xi} \beta k}{L_B^2+\frac{f_0}{N^2}\left(m^2+\frac{1}{4H^2}\right)}$ $L_B^2 \equiv \xi^2 k^2 + \eta^2 \ell^2 - \frac{1}{2}d^2 \xi^2 k^2 \eta^2 \ell^2$	Barotropic modes: $\nu = \frac{-\beta \widetilde{\xi} k}{L_B^2}$
L grid		**CP grid**	
Baroclinic modes: $\nu = \frac{-\mu_z^2 \beta k}{\mu_z^2(k^2+\ell^2)+\frac{f_0^2}{N^2}\left(\zeta^2 m^2+\mu_z^2 \frac{1}{4H^2}\right)}$	Barotropic modes: $\nu = \frac{-\beta k}{k^2+\ell^2}$	Baroclinic modes: $\nu = \frac{-\beta k}{(k^2+\ell^2)+\frac{f_0^2}{N^2}\left(\zeta^2 m^2+\mu_z^2 \frac{1}{4H^2}\right)}$	Barotropic modes: $\nu = \frac{-\beta k}{k^2+\ell^2}$
$\zeta \equiv \sin\left(\frac{1}{2}m\delta z\right) / \left(\frac{1}{2}m\delta z\right)\ \ \mu_z \equiv \cos\left(\frac{1}{2}m\delta z\right)\ \ 0 \le m\delta z = n\pi \delta z / z_T \le \pi$ for $n = 1, 2, 3, \ldots$			