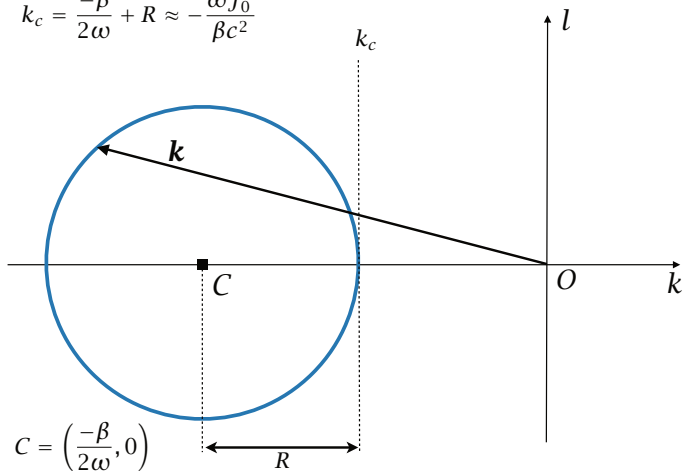


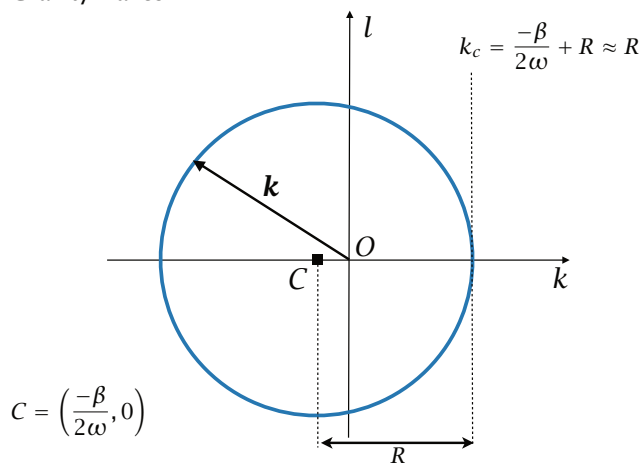
### Rossby waves

$$k_c = \frac{-\beta}{2\omega} + R \approx -\frac{\omega f_0^2}{\beta c^2}$$



$$R = \left[ \left( \frac{\beta}{2\omega} \right)^2 + \frac{\omega^2 - f_0^2}{c^2} \right]^{1/2} \approx \left[ \left( \frac{\beta}{2\omega} \right)^2 - \frac{f_0^2}{c^2} \right]^{1/2}$$

### Gravity waves



$$R = \left[ \left( \frac{\beta}{2\omega} \right)^2 + \frac{\omega^2 - f_0^2}{c^2} \right]^{1/2} \approx \left[ \frac{\omega^2 - f_0^2}{c^2} \right]^{1/2}$$

Fig. 8.1