

Dear authors,

Thank you for considering my suggestions. I think that the changes you propose move us closer to a common understanding. The following is the last iteration that hopefully will incorporate our views in one statement that makes both parties comfortable.

I (almost) agree with your observation that “in terms of π -theorem, Eq. (8) is a piecewise linear function of T , whose discontinuous points are determined by...(here I stumble a bit)... τ_{int} ”. Let us consider more rigorously what governs bifurcation points.

First, we should not forget that, as I have already mentioned in my first comment, $r < 0.8$ or $r > 1.2$ may not be potentially physically feasible for large ice sheets. Nevertheless, as a purely theoretical exercise, let us expand Eq. (7), as you say, “across different modes of resonances and non-resonances”.

$$P = \varphi(a, \zeta S_0^{1/4}, V, \varepsilon, T) \quad (7)$$

To better articulate my point, this time I choose parameters ε, T as parameters with independent dimensions, taking Eq. (7) to the following form:

$$\frac{P}{T} = \Phi\left(\frac{\varepsilon}{a}, \frac{\varepsilon T}{\zeta S_0^{1/4}}, V\right) \quad (8)$$

During a resonance mode, as we have already established, $P \sim T$ and therefore:

$$\frac{P}{T} = \Phi\left(\frac{\varepsilon}{a}, V\right) \quad (9)$$

In a bifurcation point, the similarity parameter $\frac{\varepsilon T}{\zeta S_0^{1/4}}$ is significant. If we note that

$$\frac{\varepsilon T}{\zeta S_0^{1/4}} = \frac{T}{\tau_{int}} \frac{\varepsilon}{a} \quad (10)$$

we will arrive to the critical statement: *VCV18 bifurcation points can be described as a timescale matching problem between orbital timescale and **orbitally modified** intrinsic timescale $\tau_{int} \frac{a}{\varepsilon} = \frac{\zeta S_0^{1/4}}{\varepsilon}$.*

This statement gives us the key for interpretation of Fig. 4(b). As I have already argued, the horizontal axis of it is ζ that can be rescaled as $\zeta S_0^{1/4}$ (these are “remains” of τ_{int}). The vertical axis is ε . Therefore the *slopes $\frac{\zeta S_0^{1/4}}{\varepsilon}$ are orbitally modified intrinsic timescales* that separate nonlinear resonance tongues.