

# ***Interactive comment on “Parametric resonance in the dynamics of an elliptic vortex in a periodically strained environment” by Konstantin V. Koshel and Eugene A. Ryzhov***

## **Anonymous Referee #2**

Received and published: 12 October 2016

The short paper proposes an exploration of the effect of an oscillating external flow on a two-dimensional elliptical vortex patch. In particular the effects of nonlinear suppression of the parametric instability growth on a couple of examples.

I believe the paper is interesting and overall well-written. I believe also that most of the results are original and can be accepted for publication with minor corrections (mostly typographical errors).

Minor points:

1) P51 l.10. 'omitting the fast-oscillating term ...' Why can the author do this? Does this term average to 0? Are the authors making a fast-time/slow-time separation?

Printer-friendly version

Discussion paper



2) Fig 3 and 4 should be more explained in the text, and caption should provide more information:

Questions which come to mind immediately:

- i) In fig 3 and 4: are  $e=0.15$  and  $\gamma = 0.02$  from fig 1 still used? The same question goes for fig 2 in fact.
- ii) Fig 3,4 a) Can the authors add a short sentence provides the details on how are in practice they obtained their Poincaré sections?
- iii) Fig 3,4 b) What is the exact starting point of the trajectories used to illustrate the generic behaviour?
- iv) It is unclear visually whether the trajectory in Fig 4b keeps spiralling outward for long times.

Minor points, typographical errors:

- o) Abstract: add a full stop at the end of the first sentence.
- a) p3, l1 "x-axis" -> "\$x\$-axis'
- b) p3, eqn (3)  $\Omega$  seems undefined in the present paper. The author should not expect the reader to read Bayly et al (1996) to understand symbols.
- c) p5, l7 What is  $\tau$ . It is a rescaled time  $t$  or just  $t$ ?
- d) p5, 16. The sentence unclear. Maybe rephrase as "...if the argument in the right-handed exponential function.." Then, on the next line, typo : "parametrici" -> "parametric"
- e) p6. l9 & l16. Be more specific when referring to "primary" and "secondary" zones. What is meant? I guess primary is the zone around  $\nu = 0.6$  and the secondary the one around  $\nu = 0.3$  but it is unclear.
- f). p7 caption of figure 4: "The same as in fig. 3" (not 4).

Printer-friendly version

Discussion paper



g) p8. l10 typo " nonlnear" -> "nonlinear".

---

Interactive comment on Nonlin. Processes Geophys. Discuss., doi:10.5194/npg-2016-51, 2016.

**NPGD**

---

Interactive  
comment

Printer-friendly version

Discussion paper

