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Nonlinear Processes in Geophysics
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Interactive comment

Interactive comment on "Subharmonic resonant excitation of edge waves by breaking surface waves" *by* Nizar Abcha et al.

Nizar Abcha et al.

nizar.abcha@unicaen.fr

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We thank the reviewer for his thoughtful critiques of our manuscript. We have adopted all of his suggestions. Our point-by-point response to the comments and questions is given below.

1) It is worth presenting the raw data explicitly displaying the period doubling effect. ADV versus wave gauges? Difference between wave gauge reading?

We have added a new Figure 3, where we show two frequency spectra. The first spectrum (Figure 3 a) is the FFT of the signal shown in Figure 2a. This is a spectrum in absence of breaking waves, where the first peak indicates the edge wave frequency and the second peak indicates the surface elevation frequency. The second frequency spectrum (Figure 3 b) is plotted in presence of breaking wave and indicates the sup-

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pression of the peak for the edge wave frequency.

2) The flume is narrow hence parameters of transverse oscillations are somewhat defined by its width. It is worth commenting on the choice of excitation frequency. It could happen that secondary waves may appear due to asymmetry of the wavemaker or some other parameters of the flume. Transverse waves do routinely appear in such flumes all the time and the mechanisms can vary.

Our excitation frequency range was chosen following our published study about the physical simulation of resonant wave run-up on a beach (see: Physical simulation of resonant wave run-up on a beach, Nonlin. Processes Geophys., 20. (2013)). In this study we describe edge waves excited by the 3rd resonant mode of the system.

3) How the influence of reflected waves is accounted for? Duration of the experiment is not that long so talking about rising/receding wave amplitude should be accompanied by discussion of the applicability of the assumption about the incident wave parameters.

The actual duration of the experiment is 240s, but for better graphic representation of the signal we show just first 120s. For the same reason we do not show the signal P1 recorded next to the wavemaker. We observe oscillations as a sum of incident and reflected waves. However, we use the signal just after the transition time, where the total amplitude is twice larger than the incident wave amplitude.

4) Well..ideally, incident wave parameters should be measured by an array of waveg-auges.

We cannot use probes (such as probe P1 on Figure 1) very close to the shoreline due to the low water depth. This is why we use probes P2 and P3. P2 and P3 are placed and glued to the inclined bottom slope that allows us to measure wave run-up and run-down.

Please also note the supplement to this comment:

http://www.nonlin-processes-geophys-discuss.net/npg-2016-63/npg-2016-63-AC3-supplement.pdf

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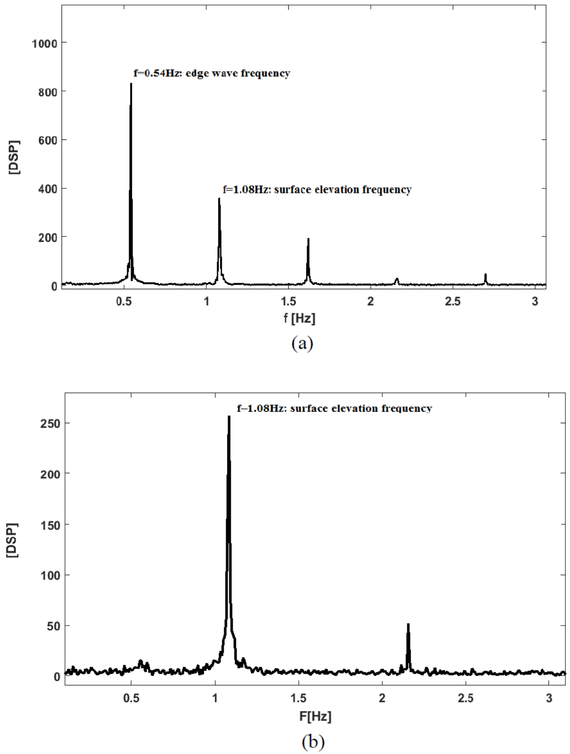

Figure 3. Power spectrum frequency: (a) in absence of breaking waves: the first peak indicates the edge wave frequency, while the second peak indicates the surface elevation frequency; (b) in presence of breaking waves: the peak for the edge wave frequency is suppressed.

Fig. 1.

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