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Discussions

Interactive comment on "Laboratory experiments on the influence of stratification and a bottom sill on seiche damping" *by* Karim Medjdoub et al.

Anonymous Referee #2

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Review on " Laboratory experiments on the influence of stratification and a bottom sill on seiche damping"

by K. Meddjdoub, I.M. Janosi and M. Vincze

As explicitely said in the title of this article, this is an experimental laboratory study of surface wave excitation and damping in a two layer system. The measurement technique is quite simple and based on dye visualization, video recording and basic image analysis. If the introduction that presents the problem under study and the relevant bibliography is well done, I have not at all be persuaded by the scientific results. I do not recommend the publication of this article that does not contain enough material. Here are the main points that rise some problems:

1) The role of the obstable in the bottom layer is not clear and never studied. The flow around it should be measured and might explain its role in the interfacial waves generation.

2) The excitation by the wave maker is kind of obscure. Its motion should be qualified: what is its motion (amplitude, duration)? This could be done by video analysis.

3) Both interfaces motions should be analyzed through the space-time series recorded by the camera. The 2D FFT transform will thus show the experimental dispersion relations for each interface, to be compared with the classical surface wave theories.

4) The use of the Transfer function, simply defined by the ratio of the Fourier spectra of themotions of each interface is misleading: for instance, if the interfacial wave gains its energy at a given frequency by an other effect than linear direct energy transfer from the free surface mode, then the division by zero will make T(f) to diverge. I will recommend the use of cross-spectra that will show the energy exchanges between the Fourier modes.

5) The extraction of the energy damping coefficients is not explained but the results of major importance for the authors.

6) The authors claimed that the Fourier Transform of a damped sinusoïdal function possesses low frequency peaks. This is wrong in general. The Fourier Transform of exp(âĂŤat) sin(w0t) is : w0/[-wˆ2 + i w a + w0ˆ2 + aˆ2] and does not contain necessary low frequencies.

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