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Interactive comment on "Wave energy attenuation in fields of colliding ice floes. Part B: A laboratory case study" *by* Agnieszka Herman et al.

Anonymous Referee #2

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The paper describes laboratory measurements of wave dispersion and attenuation in sea ice collected in the Hamburg Ship Model Basin (HSVA). It is connected to another paper concerned with theoretical modeling finalized to a theoretical representation of the data reported. The experimental set-up and the methods used to perform measurements are well described and denote the huge authors' expertise in this field. Observed wave attenuation data were compared with two models. The first was a scattering model by an ensemble of elastic floating plates using a method based on a matched eigenfunction expansion (MEEM); the second was a dissipative model of sea ice based on a discrete-element model (DEM), which is detailed in the companion paper (Part A). Results show that the MEEM model predicts lower attenuations than those measured, thus revealing the chief contribution of dissipative mechanisms as described in DEM

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Discussion paper

to the observed attenuations. Attenuation was frequency-dependent, but a non-unique set of the tuning parameters (3 in total) was found to explain the observations. Although authors deeply discuss this behavior in order to find the causes, i.e. the uncertainties of the measured data, they did not arrive at a unique conclusion for which a unique set of fitting parameters could be fixed. It resulted that both exponential and power attenuation law explained the collected data with comparable accuracy. This outcome reveals how hard would be to ascertain the nature of the dissipative processes occurring the MIZ.

I support this paper. I have only minor comments for the authors: 1) in order to cast the presented results into a realistic frame, I would be happy the authors agree to add a discussion about the scaling to the ocean wavelengths and sea ice sizes occurring in the Polar regions. 2) Figure 2 is important but not well explained. Please add further comments with special focus on the assumed wave dispersion relationship.

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