

## ***Interactive comment on “An improved CryoSat-2 sea ice freeboard and thickness retrieval algorithm through the use of waveform fitting” by N. T. Kurtz et al.***

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– PLEASE IGNORE THIS SECTION IN MY REVIEW –

Page 726 line 10: “The power detected echoes contain 128 range bins in SAR mode and 10 512 range bins in SARIn mode, each range bin is sampled at 1.563 ns (0.234m range resolution in vacuo).”

Would there be some benefit in having an over sampled data product (i.e.  $\sin(x)/x$  interpolation to get finer sampling)? This  $\sin(x)/x$  interpolation should be done on voltages and therefore before any kind of incoherent detection. This would require a change or addition to the Cryosat-2 data products I think. If you agree that this would be worth-

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while, is this something that could be commented on in the paper?

– REPLACE WITH THIS INSTEAD –

The range resolution for Cryosat-2 is approximately  $c / (2 \cdot BW)$  where  $c$  is the speed of light and  $BW$  is the 320 MHz bandwidth. Therefore the range resolution is 0.468 m. The range sampling is 0.234 m (or twice the range resolution) to preserve the Fourier domain after the power envelope is taken of the signal. This allows  $\sin(x)/x$  interpolation to be applied if you wish to achieve a higher sampling rate, but does not imply that the range resolution is 0.234 m.

The paper should be modified to quote range resolution as 0.468 m. If it would be beneficial to the algorithm applied by the authors to have finer sampling, then regular sinc interpolation (e.g. by zero padding in the Frequency domain) would work.

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Interactive comment on The Cryosphere Discuss., 8, 721, 2014.