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Interactive comment on "Healing of snow surface-to-surface contacts by isothermal sintering" *by* E. A. Podolskiy et al.

Anonymous Referee #2

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This is a very well-designed study. In the manuscript, a new apparatus to study time-development of shear strength of snow was introduced, then preliminary cold room experimental results using the apparatus were shown. The study demonstrates the dependence of increasing the interface strength resulting from isothermal sintering on normal pressure; higher pressure leads to higher initial strength and sintering rates. The study also shows the time-dependence of increasing the interface strength; the strength increases rapidly in the first hour hours. The increase ratio in this study is described as a power law function of time with approximately 0.21 exponent, which agrees well with several previous studies. The manuscript is very well written, and I do not see any problems with the analysis or presentation. Moreover, the reported new shear apparatus should become a powerful tool for future studies of the mechanism of isothermal sintering. I believe the manuscript requires only minor editing before

publication in The Cryosphere. I have provided speciïňĄc editorial comments and my suggestion for improvement of the arguments below.

Specific editorial comments

p.2468 l.27 Please add the information of the total weight of your apparatus.

p.2470 l.3-8 The definitions of σn and σc are ambiguous. Please clear each definition.

p.2471 l.17-22 This sentence is somewhat difficult to understand the scientific logic. Because the axes in the figures are log scale and small difference in the figure should become large in the real scale, thus I am not sure that the increases in strength was of comparable for σn =0.5 and 1.0 kPa in Fig. 2b and c. Please explain more detail.

Suggestion for improvement

Figure 5: Please add τf(0) in Y axis.

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