Dear Dr. Bair,

Thank you for taking time again to review our paper. Below we have pasted your comment in blue and our response as well as how we changed the manuscript in black.

The authors failed to fully respond to my review. On p.8 of the combined response, they address all the minor critiques but do not respond to the major issue. To rehash, in the first review, I asked the authors to better motivate their study:

"My major critique is that no attempt is made to link these measurements to slope scale avalanches or practical use, which should be overarching goals. Since its inception, the PST has been used to study fracture in snow, however we know that, as with any small-scale stability test that involves isolated blocks of snow, it is contrived and not fully representative of the avalanche process. Recent work (e.g. Gaume et al., 2019) suggests that the PST can effectively represent collapse waves in low angle terrain, but that the exaggerated bending is not representative of slope scale failure. For example, slab fracture in the PST begins at the top of the snowpack, while the simulated crowns in Gaume et al. (2019) open from the bottom. Crack speeds measured in avalanches (Hamre et al., 2014) are several times faster than 21-30 m/sec values measured in the PSTs here. Thus, I suggest further discussion on the motivation and utility of these high speed PST measurements towards understanding the avalanche process. Why are we still doing PSTs and carefully studying them? "

This omission strikes me as an oversight, but it still should have been addressed

As you, we are keen to know how indicative PST's are for assessing snow slope stability. However, this manuscript is essentially a methods paper where we present and evaluate the DIC method to study crack propagation in snow with the PST with unprecedented detail.

The PST is a well-established test to assess the onset of crack propagation. The improved temporal resolution in our experiments allows us for the first time to investigate the dynamics of crack propagation in a PST. Whether the PST is a suitable test to investigate dynamic crack propagation, and how representative it is for the fracture process in avalanches is a legitimate question, but goes far beyond the scope of our work. The three flat field PSTs presented in the manuscript represent three typical outcomes of a PST: slab fracture, crack arrest and full propagation. Based on these three examples, we cannot make any conclusions about the relevance of these PSTs for the avalanche release process in general.

Of course, we are aware of the publications and the very recent modelling approaches. All the recent and ongoing research efforts will undoubtedly contribute to answer the question you rise in the near future.

To take up the issue you raised we amended the Introduction section lines 40 – 47:

"The Propagation Saw Test (PST), a fracture mechanical field experiment for snow (Sigrist et al., 2006;Gauthier and Jamieson, 2006), can resolve processes at the snowpack scale. It was intensely used to study the onset of crack propagation (e.g., Birkeland et al., 2019;van Herwijnen et al., 2016). If the PST is a proper test to study self-sustained crack propagation and thus relates to slope scale processes is an open question. To the best of our knowledge,

no study shows that the PST geometry (isolated beam) has an influence on self-sustained crack propagation and recent findings suggest that crack propagation speeds measured during PST experiments may be indicative for slope scale processes (Bergfeld et al., 2020). However, quantities characterizing self-sustained crack propagation may depend on PST length, snowpack characteristics and slope angle, as these parameters influence crack propagation (Gaume et al., 2019).”

And in line 61 – 63, where we also mention the higher crack speeds reported by Gaume et al. (2019) and Hamre et al. (2014):

“However, much higher crack speeds were estimated as well (Hamre et al., 2014;Gaume et al., 2019;Trottet et al., 2021). This highlights again, that reported PSTs do not cover the full parameter space, especially in terms of PST length.”

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