Response to additional remarks by Michael Zaiser

The reviewer agrees with our response to his initial concerns and asks for further clarification of the derivation of anticrack model equations we use as reference to benchmark our model. Below, we provide the requested details showing the reviewer's comments in blue. We thank the reviewer for his time and the detailed review.

The authors have addressed most criticisms raised in the previous report. However, I have one more major concern. Comparison with the work of Heierli (2008) is carried out in a unusual manner, since the equation (30) used by the authors in the present manuscript does not stem from Heierli but from a paper of Schweizer (2011). I have two concerns regarding this equation:

1) Schweizer (2011) give w0 in Eq. (30) as (3/4) etaˆ2 tauˆ2. I cannot easily see how the authors define w0. It seems to be explained in Figure 4 but I cannot see how this could match the expression of Schweizer. Please give a clear mathematical (not graphical) definitiion and clarify.

2) Eq. (4) of Schweizer (2011) , which equals Eq. (30) of the present paper, is supposed to follow from an original expression of Heierli (Eq. (1) of Schweizer 2011 or Eq. (4.13) in the thesis of Heierli). I cannot easily see how this derivation has been obtained (I tried to derive it but failed). Please give a derivation that shows how your Eq. (30) follows from the original relations given by Heierli.

I feel unable to asess the implications of the above two criticisms. If the requested derivations can be provided then I see no problem with publishing the paper as is. If they can not, then the anyalysis surrounding Eq. (30) and Figure 14 needs to be re-done from scratch.

In the work of Heierli (2008) the strain energy of the considered notched configuration is given. The differentiation of this energy with respect to the crack length provides the energy release rate of the anticrack model (Eq. (3) in Schweizer (2011)). This provides the closed-form analytical solution given in Schweizer (2011) in Eqs. (4)–(9). We have used this expression for the comparison in our work. However, as the reviewer pointed out, there are typos in the current version of our manuscript in the constants given in the appendix and w_0 is omitted. The corresponding paragraph now correctly reads:

> With normal and shear loading $\bar{q}_\mathrm{n} = -\rho g h \cos\varphi$ and $\bar{q}_\mathrm{t} = \rho g h \sin\varphi$, respectively, the constants w_0 to w_4 of Eq. (30) read
>
> $$w_0 = \frac{3\eta}{4}\bar{q}_\mathrm{t}^2, \tag{1}$$
> $$w_1 = \left(\pi\gamma + \frac{3\eta}{2}\right)\bar{q}_\mathrm{t}^2 + 3\eta^2\bar{q}_\mathrm{n}\bar{q}_\mathrm{t} + \pi\gamma\bar{q}_\mathrm{n}^2, \tag{2}$$
> $$w_2 = \bar{q}_\mathrm{t}^2 + \frac{9}{2}\eta\bar{q}_\mathrm{n}\bar{q}_\mathrm{t} + 3\eta\bar{q}_\mathrm{n}^2, \tag{3}$$
> $$w_3 = 3\eta\bar{q}_\mathrm{n}^2, \tag{4}$$
> $$w_4 = 3\bar{q}_\mathrm{n}^2, \tag{5}$$
>
> in the notation of the present work where $\gamma \approx 1$ and $\eta = \sqrt{4\,(1+\nu)\,/5}$ are constants.

Also note that Fig. 12 misrepresents the boundary conditions used by Heierli. While it is correct that weak layer deformation is neglected in Heierli's model, there are no constraints imposed on the slab as shown in the figure.

We agree that Fig. 12 did not reflect the boundary conditions of the Heierli model correctly although closely matching Fig. 4.4 in the thesis of Heierli. The shear deformation ψ at the boundaries of the anticrack interval is part of the energy functional of the Timoshenko beam and is not defined but obtained from energy minimization (discussed on p. 48 in the Thesis of Heierli). We have changed Fig. 12 to capture this correctly.