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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Study on Mechanical Properties and Dissipation Capacity of Ring Net in Passive Rockfall Barriers" *by* Chengqing Liu et al.

Anonymous Referee #1

Received and published: 27 August 2018

Dear authors,

thank you for considering my previous comments. Most of them were considered satisfyinlgy. Let me allow to comment some of your revisions. My comments are related to the linenumbers of the version including all tracked changes.

L44ff: Your judgement on the existing research is to general.

- There is still more existing research to include in this overview section. Please, intensify your literatur research. It is not my part to list all the single research works that exist since the late nineties. For example, the original works of Nicot were not published in 2012 but much earlier in the late nineties and at the beginning of the millenium. Or Volkwein (2004) setup a special discrete element for net rings ("Volkwein,

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A. (2004). Numerische simulation von flexiblen steinschlagschutzsystemen (No. 289). vdf Hochschulverlag AG."). And much more publications exist.....

- You wrote that there is barely no differenc ein the existing research. Please, explain both what is the same between these researches and what is the difference of your research to the existing ones. From my point of view, your research is pretty much the same.

L46: After reading this sentecne I would expect that your article finally brings the adequate mechanics. However, it still lacks a lot (three point tension, comparison with the analytical solution of Nicot (1998/99) etc.).

L75: "Grassl hans gerhard" –> "Grassl"

L108: Insert "Point" between "Two Tension" (same as in L140).

Section2: In your reply to my previous comments regarding 3-point-tensioned rings you stated that the influence of these rings is marginal. However, your calculation examples contain 20-33% of rings that are connected at three and not four points. I would estimated that this number is not small. Please quantify the influence and error induced by this assumption.

Fig.5: Where are the points CDEF? Are they need anyhow? Do you need ER & CD in this figure?

L122: Which unit has to be taken for theta? Is it in radians or degrees? Between which values of theta is the formula valid?

L122: Please indicate delta in Fig. 5.

L125/126: Please, compare the equivalent section radius of a single ring with the one of Grassl (2002).

Section 2 and regarding my previous comment to your original Page6: You ansered that you did not take into account rebound. This is ok. But my comment had different mean-

ing not looking at the overall rebound of block in the net. If you take a single ring that previously has been plastically deformed and you cut it in one place, then you can observe an inward snapping of the cut/open ends (see figure 3.6 of https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/148332/eth-27491-02.pdf). This shows that a certain amount of elastic energy has been stored within the deformed ring. Please, take this amount of energy into your energy balance to adequately solve the mechanics.

Fig.11:

- If you remove the boundary conditions parallel to the edges (you can leave a single one for numerical stability) than you get exactly the boundary conditions as you would have in the field with the net supported along a rope.

- Remove subfigre 11(a)

Figs. 12 & 13: "Both" –> "Two"

L247: "by 1m/s, the impact velocity of rockfall is v_lim+1, at this point," –> "to v_lim + 1m/s" L358: DANY –> DYNA (also stated in my previous comments)

Table 3: Please discuss and compare whether - and if so how - static sag of the net has been considered in each case.

Section 2.4: Add the comparison with Grassl (2002) to your discussion!

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