

Interactive comment on “Extracting real-crack properties from nonlinear elastic behavior of rocks: abundance of cracks with dominating normal compliance and rocks with negative Poisson’s ratio” by Vladimir Y. Zaitsev et al.

Anonymous Referee #1

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Examined article is theoretical and considers the approach for description of the important and interest problem connected with determination of the behaviour of the solid medium with distributed defects (cracks). In contrast to works in which the penny-shape cracks and thin elliptical voids with small aspect ratios have been used individually, in the examined article the new approach bases on the examination of the aggregate of the cracks of two types. The cracks are considered as a highly compliant defects with independent normal and shear compliances not restricted by a predetermined proportion between them.

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Discussion paper



Authors propose an approach to the description of the deformation of mediums with compliant defects using introduced parameter characterized the relative compliance of the defects, and demonstrate possibilities of sufficiently strong variations of tensosensitivity also elastic modulus from the stress, and (the essentials) – possibility existence of negative Poisson's ratios under the certain conditions. The authors collected published data and showed that experiments demonstrate negative Poisson's ratios in a number of cases.

Results of the examined work in spite of some singularity and absent of the clear substantiation of the physical mechanisms resulting to sufficiently high negative Poisson's ratios are of interest as a whole and could be carried to scientific community. Publication of this article will be used for good basis for discussions and attracting attention to examined problem.

[Interactive comment on Nonlin. Processes Geophys. Discuss., doi:10.5194/npg-2017-9, 2017.](#)

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