

## ***Interactive comment on “Study on connectivity mechanism and robustness of three-dimensional pore network of sandstone based on complex network theory” by Guannan Liu et al.***

### **Anonymous Referee #1**

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The authors have modified the manuscript following some of my suggestions; yet, in my opinion, the significance of the results and their presentation have not improved from the last version. Therefore, I do not recommend the publication.

Here are some points that support this decision:

One of the main conclusions of the paper is that "the sandstone seepage network belongs to a class of scale-free networks". However, by inspecting Fig. 3 one notices that the degree distributions look like single-peaked curves, i.e. the networks are actually more similar to ER and WS networks. Moreover, no statistical test is performed to check whether the degree distributions indeed follow a power-law; the analysis is only

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visual and clearly leads to a wrong statement.

The analysis of the eigenvector centrality is also solely performed by means of a visualization. Figure 4 only shows that the distribution of this measurement is different across the networks, but no quantitative indicator is shown. The figure thus ends up being not relevant for the paper.

Still some confusing sentences are found in the text. For instance, in page 7 after line 20: "The closer the connections between adjacent nodes in the network, the larger the density between them, and the relatively independent node modules may form in the process of flow". Adjacent nodes are already connected, so how can they be more closer? And density of what measurement is larger?

Finally, the quality of the figures did not improve from the first version of the manuscript.

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Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2017-21>, 2017.

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