"Volume-to-Area Law Entanglement Transition in a non-Hermitian Free Fermionic Chain" by Youenn Le Gal, Xhek Turkeshi, Marco Schirò

While many studies on entanglement entropies in non-Hermitian systems have been carried out, and in particular for the Su-Schrieffer-Heeger model, the emphasis of this paper is original. The authors compare the transition from a volume to an area scaling law in comparison to the transition from the PT-symmetric to the spontaneously broken PT-symmetry regime. The overall conclusion is that the transitions are not directly related as the volume to an area scaling law takes place deep inside the broken PT-symmetry regime. In fact the transition occurs precisely at the onset of the gapless spectrum. The authors speculate that only when all the short lived quasiparticles are present the transition occurs. This is an interesting results that inspires further investigations to clarify the universality of this observation.

The presentation is in general clear, but I have a few, mostly minor, points the authors should address:

- I think it is important to properly define the norm used in equation (3). In the PT-symmetric regime one would expect the norm to be conserved in contrast to the general statement made after this equation. Is this not the case?

- Equation (4) is not what is usually referred to as the nonlinear Schrödinger equation. The authors should also say in which sense this equation is meant to be nonlinear.

- "Schrödinger equation" appears in all kinds of variants throughout the text, mostly as Schrodinger equation, but also as Schrd̈inger equation. This should be fixed.

- The labelling between letters in figures and the text should be made consistent, e.g. in figure 1 the authors use ϕ whereas in equation (8) the letter Φ is used.

- In figures 2 and 3 some circles, triangles and diamond appear that have no use.

- There should be a comment on how the contour in equation (16) is to be understood.

- The references need some tidying up, for instance [55] and [73] are identical.

- The following reference seems to be relevant: Ali, T., Bhattacharyya, A., Haque, S. S., Kim, E. H., Moynihan, N. (2020). Post-quench evolution of complexity and entanglement in a topological system. Physics Letters B, 811, 135919.

After these issues have been addressed properly I would like to recommend the manuscript for publication.