Review of: "Multiplicity of solutions for nonlocal fractional equations with nonsmooth potentials"

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Potential competing interests: No potential competing interests to declare.

About **Multiplicity of solutions for nonlocal fractional equations with nonsmooth potentials** by Ziqing Yuan and Lin YU

In this paper, the authors study nonlocal fractional Laplacian problems involving nonsmooth potentials. It follows previous work carried out by one of the authors, Ref. [32] in the present work. The main thrust of the paper is the existence of at least three weak solutions to this class of fractional Laplacian problems without any assumptions about the behavior of the involved nonlinearities at the origin. The proof consists of showing that the associated energy functional satisfies the assumptions of the three non-smooth critical points theorem stated in [32] and of combining these results with the analytical framework of fractional Sobolev spaces developed by Servadei and Valdinoci.

The document is quite well written. Moreover, the results are novel and non- trivial with technical and precise proofs. They will certainly be useful in many researches in nonlinear theory of elliptic PDEs in this field.
So I think this manuscript could be published after minor revision, considering the following comments.

1.Page 01 Please, precise the definition of ∂F(x, u), ∂G(x, u) and ∂H(x, u). 2.Page 02 The sentence introducing (1.3) is not correct.

3.Page 05 In the definition of ∂I(u), there is a confusion between \nu and v. Furthermore, is this definition the definition of the generalized gradient of I(u)?

4.Page 06 In the item (vii), what is the meaning of 2^X*?
5.Page 07 in (F3), write \xi(x,u) instead of \xi and the same in (G3) and (H3). 6.Page 09, in the item (ii), it is Fatou's lemma instead of Fadou's lemma.
7. Page 12 At the beginning of page 13, where is defined \hat{k}?
8. Where is the potential functional H taken into account in the proof of theorem (3.1)?
9. Please, reorganize the entire reference using alphabetical order.