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.

\documentclass[11pt]{article}
\usepackage{amsfonts}
\textheight 24cm \textwidth 16cm \topmargin 0in \oddsidemargin 0in
\evensidemargin 0in \headheight 0in \leftskip 0.8cm \headsep 0in
\renewcommand{\theequation}{\thesection.\arabic{equation}}
\parindent=0.8cm
\date{}
\makeatletter
\@addtoreset{equation}{section}
\makeatother
\usepackage{amssymb,amsmath}
\title{\textbf{Report on the paper
``Multiplicity of solutions for nonlocal fractional equations with
nonsmooth potentials" by Ziqing Yuan, Lin Yu}}
\begin{document}
\maketitle \large \baselineskip 14pt

$\mathbf{Overview}$: In this paper, the authors investigated the following nonlocal fractional Laplacian problem:\\

$$\begin{cases} -\mathrm{L}_K u \in \varepsilon \partial F(x,u) - \lambda G(x,u) + \nu H(x,u), & \text{in } \Omega, \\ u = 0, & \text{in } \mathrm{R}^n \setminus \Omega, \end{cases}$$

where Ω is a bounded domain in $\mathbb{R}^{n}$ with a C^2-boundary, $n > 2s$, $s \in (0,1)$, the maps F, G, H are measurable potential functionals, which are only locally Lipschitz and in general nonsmooth in the second variable.\\

$\mathbf{Conclusion}$: The main result obtained in this paper is

new. The paper promotes the results of the existing literature to a certain extent. The authors overcome the difficulties caused by the appearance of nonsmooth potentials, and gives a proof of the main result. The paper is well typed and written. The proof of the main result seems correct and involves some careful analysis. I suggest that this paper be published on \textbf{Qeios}. To make the paper in a better shape, I suggest the following points:\\

1. Page 1, line 19, `the maps $F, G, H: \Omega \times \mathbb{R}$ are measurable potential functionals' should be `the maps $F, G, H: \Omega \times \mathbb{R} \rightarrow \mathbb{R}$ are measurable potential functionals';

2. Page 2, line 21, `problem 1.1 is locally Lipschitz instead of differentiable' should be replaced by `problem (1.1) is locally Lipschitz instead of differentiable';

3. Page 2, line 26, `problem 1.1 has at least three critical points' should be replaced by `problem (1.1) has at least three critical points';

4. Page 2, line -13, `In [26], Servadel and Valdinoci proved the following fractional Laplacian equation' should be replaced by `In [26], Servadel and Valdinoci considered the following fractional Laplacian equation';

5. Page 3, line -9, `In this section, we briefly recall the definition of the functional space' should be replaced by `In this section, we briefly recall the definition of the function space', the similar errors in other places also need to be corrected, such as in Page 3, line -8;

6. Page 4, line 8, `(and so $v = 0$ a.a. in $\mathbb{R}^{n}\backslash\Omega)$' should be replaced by `(and so $v = 0$ a.e. in $\mathbb{R}^{n}\backslash\Omega)$', the similar errors in other places also need to be corrected, such as in Page 4, line 11. Page 5, line 13, etc.;

7. Page 4, line -16, `The embedding $j:X_0 \hookrightarrow

L^{q}(\mathbb{R}^{n})$ is continuous for any' should be replaced by `The embedding $j: X_0 \hookrightarrow L^{q}(\Omega)$ is continuous for any';

8. Page 5, line -13, `$\cdots$ be locally Lipschitz function' should be replaced by `$\cdots$ be locally Lipschitz functional', the similar errors in other places also need to be corrected, such as in Page 5, line -5, Page 5, line -10, etc.;

9. Page 10, line -10, `$\cdots$ has a strong convergence.' should be replaced by `$\cdots$ has a strong convergent subsequence.'.

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