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Existence of unique fixed point of a mapping defined on an uniquely remotal subset in Hilbert space. (English) Zbl 07565189
J. Anal. 30, No. 2, 547-556 (2022)

Summary: In this paper we introduce the notion of $f$-partial statistical continuity of a function (where $f$ is an unbounded modulus function) which is much weaker than continuity of a function. We give an example to show that $f$-partial statistical continuity is weaker than continuity. Then we apply unbounded modulus function to give some answers to farthest point problem in real normed linear space which improves the result in [12]. As an application, we provide a sufficient condition for the existence of an unique fixed point of a self mapping defined on a non-empty, closed, bounded uniquely remotal subset in Hilbert space. Lastly, we introduce the notion of $f$-statistically maximizing sequence of a non-empty bounded subset $M$ of a normed linear space $X$ and show by an example that this notion is weaker than maximizing sequence.

MSC:
46B20 Geometry and structure of normed linear spaces
41A65 Abstract approximation theory (approximation in normed linear spaces and other abstract spaces)
41A50 Best approximation, Chebyshev systems
47H10 Fixed-point theorems

Keywords:
continuity; unbounded modulus function; uniquely remotal; farthest point map; maximizing sequence

Full Text: DOI

References:


Steinhaus, H., Sur la convergence ordinaire et la convergence asymptotique, Colloquium Mathematicae, 2, 73-74 (1951)

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