

## ON AUTOCONTINUITY AND PSEUDO-AUTOCONTINUITY OF FUZZY COMPLEX MEASURES

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**ABSTRACT.** *In this paper, we investigate the extension of classical complex measure and fuzzy measure - fuzzy complex measure, and show the concepts of autocontinuity and pseudo-autocontinuity on fuzzy complex measure. We give the equivalent relation of autocontinuity from above and autocontinuity from below and illuminate it by an example. We verify the equivalent relation of pseudo-autocontinuity from above and pseudo-autocontinuity from below of fuzzy complex measure and give a set of equivalent definitions of pseudo-autocontinuity. It will build the certain foundation for the intensive research of fuzzy complex analysis.*

**Keywords:** Fuzzy complex measure, Null additivity, Pseudo-null additivity, Autocontinuity, Pseudo-autocontinuity

**1. Introduction.** Fuzzy complex measure theory is an extension of fuzzy measure theory. In [1] Qiu advanced the conception of fuzzy complex measure firstly, and showed its properties and convergence theorem. “Autocontinuity and pseudo-autocontinuity” are important concepts in fuzzy measure theory. Wang in [2] introduced a series of important concepts of autocontinuity and pseudo-autocontinuity of fuzzy measure. Subsequently, many scholars discuss it and obtain some significative results.

In this paper, we will extend the concepts of autocontinuity and pseudo-autocontinuity to fuzzy complex measure space. We will show the equivalent relation of autocontinuity from above and autocontinuity from below of fuzzy complex measure, and give an example to verify it. Then, we will prove the equivalent relation of pseudo-autocontinuity from above and pseudo-autocontinuity from below of fuzzy complex measure, and give a set of equivalent definitions of pseudo-autocontinuity. Thereby, we improve the existing result substantially.