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APPLICATIONS OF COMPLEX FUZZY SETS

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Abstract

The objective of this paper is to investigate the applications of complex fuzzy sets. The novelty of the complex fuzzy set lies in the range of values its membership function may attain. In contrast to a traditional fuzzy membership function, this range is not limited to [0, 1], but extended to the unit circle in the complex plane. Thus, the complex fuzzy set provides a mathematical framework for describing membership in a set in terms of a complex number. Basic set theoretic operations on complex fuzzy sets, such as complex fuzzy complement, union and intersection are discussed at length. Possible applications, which demonstrate the new concept, include a complex fuzzy representation of solar activity (via measurements of the sunspot number), signal processing application, time series forecasting problems and compare the two national economy by use of complex fuzzy relation.

Keywords and phrases: complex fuzzy intersection, complex fuzzy relations, complex fuzzy sets, complex fuzzy union, complex-valued grades of membership, application of complex fuzzy sets.

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