

GRAPHIC FUZZY MATROIDS

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(**Received:** Feb. 03, 2021 **Accepted:** Mar. 27, 2021 **Published:** Apr. 30, 2021)

Abstract: In this paper, the isomorphism between two fuzzy matroids is defined and some of their properties are discussed. Also, the concept of a graphic fuzzy matroid is presented by inducing fuzzy matroid from a fuzzy graph. Some properties of graphic fuzzy matroids are also discussed.

Keywords and Phrases: Fuzzy matroid, fuzzy isomorphism, fuzzy cycle matroid, graphic fuzzy matroid.

2020 Mathematics Subject Classification: 05C72, 05C90, 05C60, 03E99, 05B99.

1. Introduction

The concept of matroids was first proposed by Whitney in 1935 as a generalization of both graphs and linear independence in vector spaces. Matroid theory can be applied in some combinatorial optimization problems as an abstract generalization of a graph and a matrix. Graphic matroids form a fundamental class of matroids, there has been a focus of active research during the last few decades. Matroids were generalized to fuzzy fields by Goetschel and Voxman [7] using the notion of a fuzzy independent set. Their works on the fuzzification of matroids preserve many basic properties of (crisp) matroids. From then on, fuzzy bases, fuzzy circuits, fuzzy rank functions, and fuzzy closure operators are widely studied [[7] - [10]].

Since a graph is one of the motivations and basic examples of crisp matroids, it is interesting to check that: Does there exists any kind of fuzzygraphs which can be