

We investigate delta-matroids which are formed by families of subsets of a finite ground set such that the exchange axiom is satisfied. We deal with some natural classes of delta-matroids. The main result of this thesis establishes several relations between even, linear, and matching-realizable delta-matroids. Following up on the ideas due to Geelena, Iwatab, and Murota [2003], and applying the properties of field extensions from algebra, we prove that the class of strictly matching-realizable delta-matroids, the subclass of matching-realizable delta-matroids, is included in the class of linear delta-matroids. We also show that not every linear delta-matroid is matching-realizable by giving a skew-symmetric matrix representation to the non matching-realizable delta-matroid constructed by Kazda, Kolmogorov, and Rolínek [2019].