

Abstract: This thesis focuses on Maximum Distance Separable (MDS) matrices over finite fields, with emphasis on circulant MDS matrices. At the beginning, concepts related to MDS codes and their characterization are introduced. This is directly followed by an introduction into circulant matrices and their relation to factor algebras of polynomials. In the second part, we shift our focus specifically on circulant MDS matrices. We start from the construction of such matrices in dimensions 3×3 and 4×4 and then proceed to a general construction of MDS matrices from Vandermonde matrices. Finally, we find some restrictions on the existence of orthogonal circulant MDS matrices, namely that there are no such $2^d \times 2^d$ matrices over any finite field of characteristic two.