

**Meeting:** 1005, Newark, Delaware, SS 5A, Special Session on Designs, Codes, and Geometries

1005-94-138            **Keqin Feng\*** ([kfeng@math.tsinghua.edu.cn](mailto:kfeng@math.tsinghua.edu.cn)), Dept.of Mathematical Sciences, Tsinghua University, 100084 Beijing, Peoples Rep of China. *Linear Block Codes*. Preliminary report.

Linear block code is one of natural generalizations of the classical error-correcting codes. For a block code over a finite field  $F$ , the components of a code-word  $c$  belong to different extension fields of  $F$  and the weight of  $c$  is defined as the number of non-zero components. This kind of codes has not only its own interests in coding theory, but also several applications in combinatorial designs (orthogonal arrays with different levels), high-dimensional numerical integration and cryptography (secret sharing schemes with block access structure). In this talk we show that many methods and results developed in classical coding theory can be used and shifted in block case, but block code has its own difficulties. We introduce several bounds (Hamming, Singleton, Plotkin...) to judge the goodness of block codes and present methods, particularly algebraic-geometry method, to construct linear block codes to meet some bound. We also raise some open problems on block codes for further research. (Received February 05, 2005)