Batch Codes from Reed-Müller Codes

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Batch codes, introduced by Ishai *et al.*, encode a string $x \in \Sigma^k$ into an m-tuple of strings, called buckets. In this talk we consider multiset batch codes wherein a set of t-users wish to access one bit of information each from the original string. We introduce a concept of optimal batch codes. The main body of this work provides batch properties of Reed-Müller codes. We look at locality and availability properties of first order Reed-Müller codes over any finite field. We then show that binary first order Reed-Müller codes are optimal batch codes when the number of users is 4 and generalize our study to the family of binary Reed-Müller codes which have order less than half their length.

Keywords: Batch codes, Reed-Müller codes, optimal codes