1046-68-464 **Atri Rudra*** (atri@cse.buffalo.edu). *Efficient List Decoding of Explicit Codes with Optimal Redundancy.*

Suppose you want to communicate k packets over a noisy communication channel. In order to tolerate errors, you transmit a redundant collection of $n = ck$ packets for some constant $c > 1$. When can you communicate reliably despite the adverse effects of the noisy channel? That is, when can the receiver recover the original message even in the presence of corrupted packets?

Clearly, the receiver must receive at least k correct packets to have any hope of recovering the original message. In this talk, I will describe an efficient encoding (and decoding) scheme that achieves this information theoretical limit: for any $\epsilon > 0$, the receiver can recover the original message as long as $(1 + \epsilon)k$ packets are not corrupted. The location of the correct packets and the errors can be chosen adversarially by the channel.

This achieves the optimal trade-off between redundancy and error-resilience for a malicious noise model where the channel can corrupt the transmitted symbols arbitrarily subject to a bound on the total number of errors. These results are obtained in an error-recovery model called list decoding.

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