1106-94-2880 **Swanand Kadhe***, kswanand1@tamu.edu, and **Alex Sprintson**, spalex@tamu.edu. *Explicit Constructions of Information-Theoretically Secure Regenerating Codes for Distributed Storage.*

Classical codes such as Reed-Solomon codes are not well suited for large distributed storage systems like cloud storage because these codes are highly suboptimal in terms of *repair bandwidth* – amount of data downloaded while repairing a failed storage node. *Regenerating codes* are a class of codes that optimally trade-off storage space per node for reducing the repair bandwidth. We focus on designing regenerating codes that are information-theoretically secure against a passive eavesdropper (possessing unbounded computational power) that can observe a limited subset of storage nodes. We demonstrate that achieving good security properties requires that, for the codewords exposed to the eavesdropper, the minimum distance is maximized. However, the goal of achieving low repair bandwidth limits the minimum distance of a code. We take an existing family of regenerating codes and present explicit outer code construction based on coset coding that secures the underlying regenerating codes. We also consider the security properties of another class of codes, namely, *locally repairable codes* that minimize the number of nodes participating in the repair process, and bring out connections with matroid theory. (Received September 17, 2014)