1125-94-1462 **Arya Mazumdar*** (arya@cs.umass.edu), College of Information and Computer Sciences, 140 Governors Dr, Amherst, MA 01003. *Algorithms for Storage Capacity: An Information Theoretic Analogue of Vertex Cover.*

Motivated by applications in distributed storage, we have recently defined the storage capacity of a graph as the maximum amount of information that can be stored across the vertices of a graph such that the content at any vertex can be recovered from the information stored at the neighboring vertices. Computing the storage capacity is a fundamental problem in network coding and is related, or equivalent, to some well-studied problems such as index coding and generalized guessing games. In this talk, we consider storage capacity as a natural information-theoretic analogue of the minimum vertex cover of a graph. Indeed, while it was known that storage capacity is upper bounded by minimum vertex cover, we show that by treating it as such we can get a 3/2 approximation for planar graphs, and a 4/3 approximation for triangle-free planar graphs. Since the storage capacity is intimately related to the index coding rate, we get a 1.923 approximation of index coding for planar graphs and 3/2 approximation for triangle-free planar graphs. Previously only a trivial 4 approximation of the index coding rate was known for planar graphs. We then develop a general method of "gadget covering" to upper bound the storage capacity in terms of the average of a set of vertex covers. (Received September 16, 2016)