

# Factor Triples and Relative Entropy

Given a factor triple  $(X, Y, \pi)$  where  $\pi$  is a factor code from a shift of finite type  $X$  onto an irreducible sofic shift  $Y$ , and given a fully supported ergodic measure  $\nu$  on  $Y$ , we give an explicit upper bound on the number of ergodic measures on  $X$  which project to  $\nu$  and have maximal entropy among all measures in the fiber  $\pi^{-1}\{\nu\}$ . This bound is invariant under conjugacy. We relate this to an important construction for finite-to-one symbolic factor maps.