

Gyula O.H. Katona and Attila Sali

A.Rényi Institute, Budapest, Hungary

## On the Distance of Closures

In the present paper a distance concept of closures originated in databases is investigated. Two database instances are of distance 0, if they have the same number of attributes and satisfy exactly the same set of functional dependencies. This naturally leads to the poset of closures as a model of changing database. The distance of two databases (closures) is defined to be the distance of the two closures in the Hasse diagram of that poset. We determine the diameter of the poset and show that the distance of two closures is equal to the natural lower bound, that is to the size of the symmetric difference of the collections of closed sets. We also investigate the diameter of the set of databases/closures with a given system of keys, where keys are minimal sets whose closure is the whole underlying set. Sharp upper bounds are given in the case when the minimal keys are 2 (or  $r$ )-element sets.