

# Centralizers of Monoids Containing the Symmetric Group

Hajime Machida

*Hitotsubashi University, Tokyo, Japan*

For a monoid  $M$  of  $k$ -valued unary functions, the centralizer  $M^*$  of  $M$  is the set of  $k$ -valued multi-variable functions which commute with every function in  $M$ . In this talk, we determine centralizers for all monoids which contain the symmetric group. For most of such monoids the centralizer turns out to be the least clone. However, there is an exceptional case for  $k = 4$  where the centralizer of the monoid called  $M_2$  is not the least clone. Furthermore, by generalizing  $M_2$ , we define the monoid  $M_n$  of linear unary functions on  $\mathbf{2}^n$  and characterize its centralizer.

Joint work with Ivo G. Rosenberg (Université de Montréal, Montréal, Canada).