

## A homological property of stochastic polygons

Wells (1976) introduced the concept of the wreath product over monoids. Stochastic acts over monoids as a stochastic polygon appeared in the work of Skornjakov (1982). In homology the projective objects play an important role, e.g. to find homological dimensions, resolvents, etc.

In our work we can find a relation between the wreath product and the projectivity in the category of stochastic polygons over monoids, viz., in the category  $SP_M$  of right stochastic polygons over monoids the following are true:

- i) The wreath product  $A_S \text{wr} B_N$  for any  $A_S$  and  $B_N$  of  $SP_M$  is an object of  $SP_M$ .
- ii) If the wreath product  $A_S \text{wr} B_N$  is projective, then  $A_S$  and  $B_N$  are projective.