

# The extended ant colony: an algebraic and topological approach of environment appropriation

F. Peña-García<sup>1,\*</sup>, J. Medina-Díaz<sup>2</sup>

<sup>1</sup>*Group of Natural Structures and Theoretical Research, Universidad Nacional Mayor de San Marcos, Perú., Lima, Av. Universitaria s/n*

<sup>2</sup>*Department of Mathematics, Universidad Nacional Mayor de San Marcos, Perú., Lima, Av. Universitaria s/n*  
`francescoapg@gmail.com`

The concept of extended organism has undergone continuous exploration since its inception; as the organism-environment relation was constantly clarified, new concepts emerged in the light of new evidence. Here we formalize the extended colony of ants in a general mathematical model and explain its structure. Using the Theory of Natural Structures as a theoretical framework, we prove mathematical propositions regarding the construction of the extended colony and depict some of its fundamental traits. Finally, we formalize concepts related to its structure and provide an approach of depiction of natural entities as mathematical objects.