

# THE ACTION FUNCTION OF HAMILTONIAN HOMEOMORPHISMS ON SURFACES

ABSTRACT. In symplectic geometry, the action function is a classical object defined on the set of contractible fixed points of the time-one map of a Hamiltonian isotopy. Under a weaker boundedness condition, we can generalize the classical action function to the case of Hamiltonian homeomorphisms on surfaces. Through studying the properties of the generalized action function, we can generalize several classical results from the smooth world to the  $C^0$  world, e.g., the contractible fixed points set (and consequently the fixed points set) of a nontrivial Hamiltonian homeomorphism being not connected, the  $C^0$ -Schwarz's theorem, the continuity of the action functions (work in progress), etc. Partly in collaboration with Frédéric Le Roux and Sobhan Seyfaddini.