ON NON-WANDERING SETS WITH NON-EMPTY INTERIOR FOR ENDOMORPHISMS

J. SANTANA C. COSTA

In this work, developed in collaboration with Professor Fernando Micena, we investigate the property of transitivity for non-invertible dynamical systems which is related to a conjecture proposed by F. Abdenur, C. Bonatti, and L. Díaz. The conjecture involving systems with non-wandering set $\Omega(f)$ with nonempty interior and transitivity. We establish some results in this context. First, we prove that if a C^1 endomorphism admits a completely invariant hyperbolic set with a nonempty interior, then it must be a transitive Anosov endomorphism. As a consequence, we show a dichotomy for Anosov endomorphisms with a completely invariant non-wandering set: either its boundary is empty and the system is transitive, or it is equal to the whole set. Furthermore, by exploring a non-invertible version of Brin's theorem, we study accessible, partially hyperbolic endomorphisms. We prove that if such a system satisfies $\Omega(f) = M$, then it is transitive. Finally, we show that if an accessible, partially hyperbolic endomorphism possesses a completely invariant compact set with a nonempty interior where the restriction is transitive, then the entire system is transitive.

DEMAT-UFMA São Luís-MA, Brazil.
Email address: jsc.costa@ufma.br