Rate of equidistribution for the unstable manifolds of Anosov diffeomorphisms

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Let M be a compact Riemannian manifold. For a C^3 smooth topologicaly mixing Anosov diffeomorphism $F : M \to M$, we study the equidustribution properties of the unstable manifolds with respect to the Margulis measure of maximal entropy $\mathbf{m}$. Extending the results of Bufetov and Bufetov-Forni on geodesic/horocycle flows on compact Riemann surfaces of constant negative curvature to a non-linear setting, we prove that, under certain bounded distortion assumptions on the diffeomorphism, the leafwise averages on the unstable leaves of a C^2 smooth function $\psi : M \to \mathbb{R}$ with $\mathbf{m}(\psi) = 0$ are controlled by a finitely additive measure on the unstable foliation, invariant under the holonomy along stable leaves.

Using the method Gouëzel and Liverani, we contruct a Banach space of currents which admits an F-invariant finite dimensional subspace whose elements induce holonomy invariant finitely additive measures.