INVARIANT MEASURES FOR SOME SKEW PRODUCT DIFFEOMORPHISMS

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Positive entropy and unique ergodicity, are they compatible with each other for a diffeomorphism? I will give a negative answer for some skew product diffeomorphisms, by finding invariant measures with atomic conditional measures on fibers. The proof is based on the fact that, if we have a "good" pseudo orbit, then by applying shadowing techniques we can find a real orbit nearby. Some crucial steps have to be made before this shadowing procedure, such as controling return times and dealing with "bad" returns.