On Zero Lyapunov exponents and conjugacy

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We first consider linear cocycles all of whose Lyapunov exponents are zero. It readily follows from the Oseledets-Pesin reduction lemma that a sequence of conjugates of such a cocycle converges to a cocycle of rotations. By introducing geometrical ideas (related to barycenters on nonpositively curved spaces), we show (joint work with J. Bochi) that the cocycle can be perturbed so that to become conjugate to a cocycle of rotations.

Next, we pursue on the study of (groups of) diffeomorphisms with zero Lyapunov exponents, trying to obtain analogous results to those above. As a concrete issue, we show that the space of C^1 actions of every (finitely generated) nilpotent group on a compact 1-dimensonal manifold is connected (this extends a previous result of H. Eynard). Indeed, one can always achieve an action by rotations by a continuous path of conjugates of the original action.