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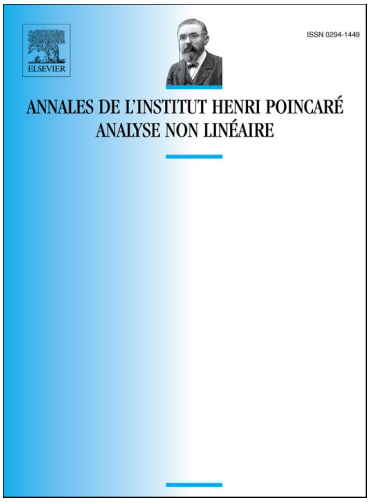

Structural stability of the inverse limit of endomorphisms

Pierre Berger, Alejandro Kocsard

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Structural stability of the inverse limit of endomorphisms

Stabilité structurelle de l'extension naturelle des endomorphismes

Pierre Berger *and Alejandro Kocsard †

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Abstract

We prove that every endomorphism which satisfies Axiom A and the strong transversality conditions is C^1-inverse limit structurally stable. These conditions were conjectured to be necessary and sufficient. This result is applied to the study of unfolding of some homoclinic tangencies. This also achieves a characterization of C^1-inverse limit structurally stable covering maps.

Résumé

Nous montrons qu'un endomorphisme a son extension naturelle qui est C^1-structurellement stable s'il vérifie l'axiome A et la condition de transversalité forte. Ces conditions étaient conjecturées nécessaires et suffisantes. Ce résultat est appliqué à l'étude des déploiements des tangences homoclines. Aussi, cela accomplie la description des recouvrements dont l'extension naturelle est C^1-structurellement stable.

Introduction

Following Smale [Sma67], a diffeomorphism f is C^r-structurally stable if any C^r-perturbation f' of f is conjugate to f via a homeomorphism h of M:

$$f \circ h = h \circ f'.$$

A great work was done by many authors to provide a satisfactory description of C^1-structurally stable diffeomorphisms, which starts with Anosov, Smale, Palis (see [PS70, Pal69]) and finishes with Robinson [Rob76] and Mañé [Mañ88]. Such diffeomorphisms are those which satisfy Axiom A and the strong transversality condition.

The descriptions of the structurally stable maps for smoother topologies (C^r, C^ω, holomorphic...) remain some of the hardest, fundamental and open questions in dynamics.

*berger@math.univ-paris13.fr, LAGA Université Paris 13
†akocsard@id.uff.br, Universidade Federal Fluminense