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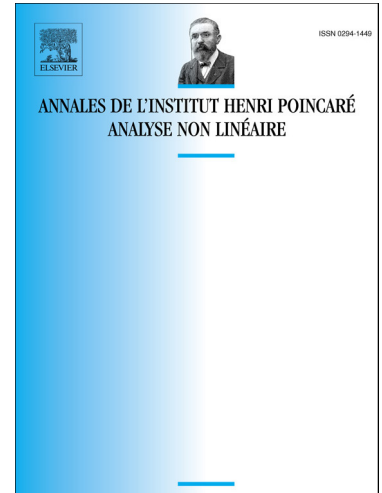
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# Structural stability of the inverse limit of endomorphisms

Stabilité structurelle de l'extension naturelle des endomorphismes

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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 accomplit 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 ( $C^r$ ,  $C^\omega$ , holomorphic...) remain some of the hardest, fundamental and open questions in dynamics.

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