Marta Canadell

ICERM Institute Postdoc 2015-2016

ICERM Semester Program on "Dimension and Dynamics"
February 1 - May 6, 2016

Sant Feliu de Guíxols, Girona

Barcelona
Dynamical Systems

The long term behavior of a dynamical system is organized by its invariant objects

\[ \rightsquigarrow \text{SKELETON of the system} \]

\[ \rightsquigarrow \text{FIXED POINTS, PERIODIC ORBITS, INVARIANT MANIFOLDS...} \]

The invariant objects that are Robust, i.e. persistent under perturbations of the system, are very important. These objects are endowed with hyperbolicity properties.
Computation of Normally Hyperbolic Invariant Manifolds

Invariant Manifold

We say that the manifold parameterized by $K$ is $F$-invariant with internal dynamics $f$ if $K$ and $f$ meet the invariance equation:

$$F \circ K = K \circ f$$

The setting: general idea

* Algorithmic treatment of invariant equation
* By using a Newton-like method the linearized equations have a geometric structure:
  - improved speed: Fast method
  - improved storage requirement
  - improved stability

PhD Advisor: Àlex Haro
Dept. Matemàtica Aplicada i Anàlisi, Universitat de Barcelona
This 2015-2016 year:

at 10th floor, office 123

Thank you! - Moltes gràcies!