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Chain recurrence classes of generic diffeomorphisms

In a first session of 2 talks, I will briefly remember what I said in the two sessions in April: Conley's theory of Lyapunov functions separation the chain recurrence classes, and examples of robustly non-hyperbolic diffeomorphisms leading to the C^∞ -generic coexistence of uncountably many chain recurrence class without periodic orbit (and therefore called aperiodic classes) which all are adding machines.

In the second session (of two 45 min talks) I will present some properties of the chain recurrence classes containing periodic points, and their relations with the homoclinic classes of these periodic points.

In the third session I will state a recent result of mine with Katsutoshi Shinohara: the C^1 -locally generic coexistence of uncountably many aperiodic classes which are not adding machines: expansive, non-uniquely ergodic or non minimal but transitive, or even non transitive but possibly uniquely ergodic. This result is based on a sequence of 2 long and technical papers and 2 recent preprints. In this session I will introduce the main new tools,

- the notion of "viral" chain property of chain recurrence classes
- the notion of "flexible periodic points"
- the notion of "filtrating Markov partitions".

The fourth session will explain how the "virality" of our "filtrating Markov partitions" with "periodic flexible points" lead to the announced generic coexistence of uncountably many aperiodic classes with a huge variety of dynamical behavior.