Ergodic theory and Fractal geometry (80763)

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Office hours: By appointment (Ross 75).

For credit: Take-home exam.

The course will cover the following topics (though some will be touched upon spottily):

- Symbolic coding

- Abstract Lyapunov exponents.

- Subadditive (Kingman) and multiplicative (Oseledets) ergodic theorems.

- Stable manifold theorem.

- Ergodicity and ergodic properties of hyperbolic measures, Pesin entropy formula.

- Ledrappier-Young theorem (for toral automorphisms).

We will review as necessary some background from ergodic theory and differentiable geometry, but will not dwell on them too long. Some of the topics above may be only sketched, depending on time constraints.

We will not be faithful to one book, but the following are good sources:

- Barreira and Pesin, *Introduction to smooth ergodic theory.*

- Hasselblatt and Katok, *Introduction to modern dynamics.*

- Rufus Bowen, *Equilibrium states and the ergodic theory of Anosov diffeomorphisms.*

- Peter Walters, *Introduction to ergodic theory* (contains most background material).