YOUNG TOWERS AND UNIFORM STATISTICAL PROPERTIES

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Let T_a, $a \in A$ be a family of nonuniformly hyperbolic transformations with invariant measures μ_a. We prove statistical limit laws for sequences of the type $\sum_{j=0}^{n-1} v \circ T_{a_n}^j$.

A key ingredient is a new martingale-coboundary decomposition, which is useful already when the family T_a is replaced by a fixed transformation T, and is particularly effective when T_a varies with a.

We also estimate correlations $\int v\, w \circ T_a^n \, d\mu_a$ uniformly in a.

Our results include cases where the family T_a consists of intermittent maps, unimodal maps (along the Collet-Eckmann parameters), Viana maps, and externally forced dispersing billiards.

This is a joint work with Zemer Kosloff and Ian Melbourne.