



## Effective weak mixing for translation flows and twisted cohomology

Jeudi 6 juin 14 :00-15 :00

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**Résumé :** We study twisted ergodic integrals and twisted cohomological equations for translation flows on surfaces of higher genus.

The motivation is two-fold : on the one hand we want to understand the deviation of ergodic averages and cohomological equations for a simple example of a 3-dimensional translation flow given by the product of a translation flow on a higher genus surface and a linear flow on a circle, on the other hand there is a well-known connection between twisted ergodic integrals and spectral measures of translation flows, already exploited in the work of Bufetov and Solomyak, and speed of weak mixing. From this connection we derive an effective version of a result with Avila on weak mixing of translation flows.

The main new idea is a natural notion of twisted cohomology and a cocycle dynamical system over the Teichmüller geodesic flow acting on a twisted cohomology bundle. By introducing this cocycle we can then apply methods of Hodge theory similar to those applied in the study of the Kontsevich–Zorich cocycle. The talk will focus on these new cohomological tools and the overall strategy of the argument.

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