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# Géométrie et dynamique dans les espaces de modules

(Giovanni Forni, Carlos Matheus et Anton Zorich)

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Un **mercredi** par mois de **14h à 15h** à l'**Institut Henri Poincaré**.

Séminaire au mois de Septembre:

- **07/09/2022 - Giovanni Forni** (University of Maryland)

**Titre:** *A Central Limit Theorem for the Kontsevich–Zorich cocycle.*

**Résumé:** The Kontsevich–Zorich (KZ) cocycle is a key dynamical system closely related to the tangent cocycle of the Teichmueller geodesic flow. The main goal of the talk is to sketch a proof of a Central Limit Theorem first for a version of the KZ cocycle over the foliated Brownian motion on Teichmueller disks, then for the usual deterministic KZ cocycle. The above-mentioned CLT's are proved in great generality, but the positivity of the variance for the deterministic KZ cocycle is restricted by the hypothesis of simple Lyapunov spectrum. These results were also originally motivated by the goal of proving the existence of significant fluctuations of the Hodge norm of the parallel transport of vectors along Teichmueller horocycles. These fluctuations are behind recent results by Chaika, Khalil and Smillie on ergodic measures of the Teichmueller horocycle flow. The arguments are based on Hodge theory, potential theory and stochastic calculus (hence they don't come from a general CLT for cocycles over hyperbolic systems). Our work is joint with H. Al-Saqban.

**Salle 01**

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