ATELIER
"LA TOPOLOGIE EN BASSE DIMENSION APRÈS FLOER "
8–12 JUILLET, 2013

WORKSHOP
**"LOW-DIMENSIONAL TOPOLOGY AFTER FLOER"**
**JULY 8–12, 2013**

# Quilted Floer theory

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I will survey the construction and applications of quilted Floer homology of three-manifolds, that is, Lagrangian Floer theory for correspondences in representation varieties, joint with Wehrheim. First I will review the construction and proof of topological invariance, which uses work of Gay-Kirby generalizing the Reidemeister-Singer theorem. An application of quilted Floer theory is Smith's symplectic proof of existence of non-abelian representations of fundamental groups of three-manifolds fibered over the circle with fibers of genus at least two, which was originally proved by Kronheimer-Mrowka. Finally I will mention some work of Duncan on the quilted version of the Atiyah-Floer conjecture.

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