1050-53-17 **Katrin Wehrheim***, MIT, Department of Mathematics, 77 Massachusetts Ave, Cambridge, MA 02139. *Lagrangian correspondences and holomorphic quilts.*

I will present some current results in a joint project with Sikimeti Mau and Chris Woodward, building a theory of Lagrangian correspondences and holomorphic quilts.

A Lagrangian correspondence is a Lagrangian submanifold in the product of two symplectic manifolds. This generalizes the notion of a symplectomorphism and was introduced by Weinstein in an attempt to build a symplectic category that has morphisms between any pair of symplectic manifolds (not just symplectomorphic pairs). We define such a cateory, in which all Lagrangian correspondences are composable morphisms and extend it to a 2-category by extending Floer homology to generalized Lagrangian correspondences. This is based on counts of 'holomorphic quilts' — a collection of holomorphic curves in different manifolds with 'seam values' in the Lagrangian correspondences. A fundamental isomorphism of Floer homologies ensures that our constructions are compatible with the geometric composition of Lagrangian correspondences. This provides e.g. a general prescription for constructing topological invariants. We are currently working on extending our setup to construct an A_∞ 2-category on chain level, which would provide a powerful tool in mirror symmetry proofs outlined by Nadler and Abouzaid. (Received January 03, 2009)