**Fabio Gironella**

**Title: Vanishing cycles for symplectic foliations**

**Abstract:** Taut codimension-1 foliations are notoriously rigid in ambient dimension 3: as proved by Novikov '64, they give for instance non-trivial topological constraints on the ambient manifold. In higher ambient dimensions, taut codimension-1 foliations are on the other hand extremely flexible, and satisfy an h-principle. Strong symplectic foliations are a natural high-dimensional generalization of 3-dimensional taut foliations, that behave rigidly, i.e. in a geometrically interesting way. Indeed, symplectic techniques such as pseudo-holomorphic curves à la Gromov work well on strong symplectic foliations.

I will present a joint work with Klaus Niederkrüger and Lauran Toussaint, where we give a new obstruction for a symplectic foliation to be strong. This comes in the form of a Lagrangian high-dimensional version of vanishing cycles for smooth codimension 1 foliations on 3-manifolds (which are known not to exist in the taut case), and the proof relies on pseudo-holomorphic curve techniques, in a way which is parallel to the case of the Plastikstufe introduced by Niederkrüger '06 in the contact setting.