

# Homoclinic points and Floer homology

**Sonja Hohloch**

**(Antwerpen)**

**Wednesday, April 17, 2024**

**16:00-17:00h on campus in M.G.004**

**Analysis & Geometry Seminar, Antwerpen**

During the last decades, Floer homology turned out to be a powerful tool in many areas of mathematics with applications also to other sciences. In the original setting, the generators of the chain groups of the homology are either transverse intersection points of two Lagrangian submanifolds or nondegenerate 1-periodic Hamiltonian orbits.

In this talk, we construct a Floer homology generated by transverse homoclinic points (= transverse intersection points of the stable and unstable manifold of a hyperbolic fixed point) of a symplectomorphism on a 2-dimensional symplectic manifold. This makes sense to be studied under the aspect of Floer homology since the stable and unstable manifolds of a symplectomorphism are Lagrangian submanifolds. The main challenge is the abundance of transverse intersection points generated by the chaotic intersection behaviour and how to define finitely generated chain groups with welldefined boundary operators.