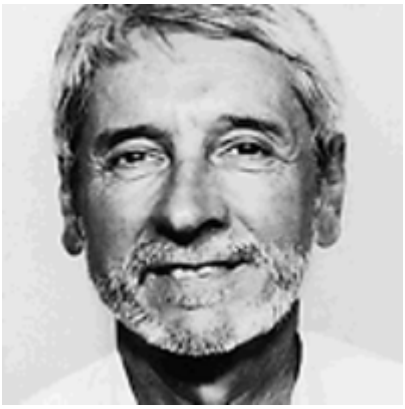
Lecture to Honor the Memory of Peter Hilton - 2012



Speaker: Guido Mislin, The Ohio State University and ETH Zürich

Title: Bounded Cohomology and Flat Bundles.

Thursday April 19, 2012, Binghamton University, Lecture Hall 9, 3:00pm.

followed by a Reception at 4.30, Club Room of the Events Center, Binghamton University. This is for the whole Binghamton Mathematics Community as well as for our visitors.

Flyer for the lecture

Abstract:

For an n-dimesional vector bundle over an n-manifold M one defines its Euler number. In case of the tangent bundle, this number is equal to the Euler characteristic of M. Conditions on the bundle restrict the possible values of the Euler number. We will be looking at the case of flat bundles (bundles which are induced from the universal covering bundle by a homomorphism from the fundamental group to the general linear group). For flat vector bundles the absolute value of the Euler number is bounded in terms of the simplicial volume of M, a quantity which only depends on the topology of M. In the case of surfaces, this bound leads to a classical result, due to Milnor, stating that the only oriented surface with a flat tangent bundle is the one with Euler characteristic 0, the torus. We will review related facts and generalizations, talk about recent progress and present some open problems surrounding the topic.