Mathematics Department University of Fribourg

Tuesday, 30.3.2010

Time: 17:15
Physics building
Lecture room 2.52

Colloquium

Dr. Nessim Sibony

Paris-Sud Orsay

Ergodic properties of complex polynomial vector fields

Abstract: *Consider the polynomial differential equation in* $\mathbb{C}^2$

$$\frac{dz}{dt} = P(z,w), \qquad \frac{dw}{dt} = Q(z,w).$$

The polynomials P *and* Q *are holomorphic, the time is complex. We want to study the global behavior of the solutions. It is convenient to consider the extension as a foliation in the projective plane* P^2*. There are however singular points. When the line at infinity is invariant, Il'yashenko has shown that generically leaves are dense and that the foliation is ergodic. This follows from the study of the holonomy on the invariant line. But generically on the vector field, there is no invariant line and even no invariant algebraic surface.*

When all the singular points are hyperbolic (which is the generic case) we will show a unique ergodicity result: Appropriate averages on leaves have a unique limit, independently of the leave. The limit is a $\partial\overline{\partial}$ *closed current directed by the foliation. The proof depends on an intersection theory of such objects and precise estimates on the behavior of leaves.The above Theorem is joint work with J.E Fornaess. If time permits we will discuss other results on ergodic properties of foliations in arbitrary dimension (joint work with T.C Dinh and V.A Nguyen).*

Tea and coffee

Time: 16:30
Mathematics building
Coffee room

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Invitation by F. Meylan and N. Hungerbühler

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