HOLONOMY INVARIANT MEASURE

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Consider a differentiable manifold M, a foliation $\mathcal{F}$ on M and μ a measure defined in the space transverse to the foliation $\mathcal{F}$ which is invariant "by the flow of the leaves," this measure is called holonomy invariant transverse measure. The existence of such measure is important and useful to understand the dynamics of foliations. In this lecture, we present the sufficient conditions for the existence of such measures, for which we introduce the definition of a leaf growth. The growth of a leaf will be defined in order algebraic and geometric, and we will show that these two notions coincide. Our goal is to prove the following existence theorem of J. F. Plante.

Theorem: Let $\mathcal{F}$ be a codimension k foliation of a compact manifold M. If L is a leaf of $\mathcal{F}$ having non-exponential growth then there exists a non-trivial holonomy invariant measure for $\mathcal{F}$ which is finite on compact sets and wich has support contained in the closure of L.

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