Seminários Genet-Roussel
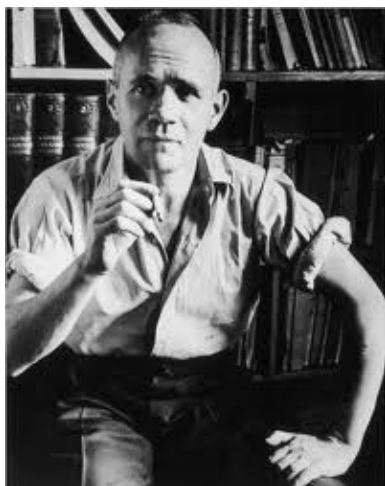
The Linearization Theorem for Proper Lie Groupoids

Abstract: The linearization theorem for proper Lie groupoids relates the geometry of a Lie groupoid in a neighborhood of an orbit with that of its local (linear) model at the orbit. The goal of the seminar is to discuss this theorem.

In the first half, I will define Lie groupoids and their local models. Then I will state the linearization theorem and show how to recover three classical theorems in differential geometry as special cases: the Slice Theorem (for compact group actions), Ehresmann's Theorem (about local triviality of proper submersions), and the local Reeb Stability Theorem (for foliations).

The second part of the seminar will be devoted to giving an idea of the proof of the theorem. It consists of two main steps: reducing to the case where the orbit is just a point (Weinstein's trick), and applying a Moser deformations argument to prove the theorem in the fixed point case.

This seminar is based on joint work with Marius Crainic (http://arxiv.org/abs/1103.5245)