David Marín Universitat Autònoma de Barcelona, Spain

Derivatives of the Separation Function of Generalized Saddle Connections.

A classical formula shows that the breaking of a connection between two hyperbolic saddles can be studied by means of a convergent integral that is often called the Melnikov integral. In this talk we will explain how to apply this formula to more general situations, for instance, when the singularities are semi-hyperbolic or even nilpotent. We will see that in some of these cases, the improper integral is no longer convergent but nevertheless, under convenient hypothesis, there is a kind of residue that provides the desired information. We will present a general statement and some examples illustrating its applicability. This is a joint work with J. Villadelprat.