

## **Smoothing Lyapunov functions**

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### **Abstract:**

This is a joint work Pierre Pageault.

A Lyapunov function is a function which is non-increasing along orbits of a dynamical system.

Continuous Lyapunov functions for flows have been constructed by Conley. Smooth Lyapunov functions can be constructed by Conley's method for homeomorphisms. However there are examples of continuous flows which do not admit a smooth non-constant Lyapunov function. We will explain this phenomenon. We will also give results on the possibility of approximating a Lyapunov function by a smooth Lyapunov function.