Abstract: I will present the final result on the stability of symplectic leaves of Poisson manifolds according to joint work with Rui Loja Fernandes. There are two stability results: one refers to the stability of the leaf as a manifold, and the other to its stability as a symplectic manifold.

They are both of the type: cohomological (infinitesimal?) stability implies stability. The key steps in the proof are: a Vorobjev-type decomposition of Poisson tensors around a leaf, rephrasing the problem in terms of a functional that can be shown to admit local minima and then proving that a local minimum must be a zero. The last step uses the fact that intrinsic to the problem there is an elliptic complex, and that the cohomological condition can be reformulated as the condition for a certain modified Laplacian, defined on the appropriate Sobolev spaces, to be an isomorphism.

In the first half of the lecture, I will discuss the statements of the results. In the second half, I will discuss the proof (in as much detail as time allows).