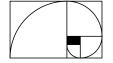# Symplectic geometry and Floer homology

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In memory of Laurent Schwartz whose charm was so very influential. I owe it to him to have become a mathematician.

Summary. Here are the revised notes for lectures held at the 13th Brazilian Topology Meeting in Belo Horizonte (July 2002). The purpose is to give an introduction to symplectic Floer homology and, in a simple case, a sketch of proof of the Arnold conjecture. This conjecture gives a lower bound for the number of fixed points of a Hamiltonian diffeomorphism in terms of the sum of the Betti numbers. Floer theory is a sort of infinite dimensional Morse theory on a loop space. The Morse index is replaced by the Maslov-Conley-Zehnder index. Some results about the Maslov cycle in the linear symplectic group are gathered in an appendix.