Lagrangian Floer homology

of

cotangent bundles

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Floer homology is today an essential technique in symplectic topology. Inspired by ideas of Witten and Gromov in the 1980s, it has made possible the resolution of many difficult problems, and continues to do so.

In this talk I will show how one can define the Lagrangian Floer homology of two fibers of the cotangent bundle of a compact closed manifold and prove that it is isomorphic to the singular homology of the based loop space of the base manifold, following the paper "On the Floer homology of cotangent bundles" by A.Abbondandolo and M.Schwarz. We start by giving an introduction to Morse homology and see how this motivates the construction of Floer homology.