

Project: Morse Flow Trees

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Outline

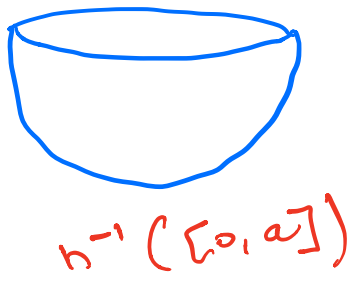
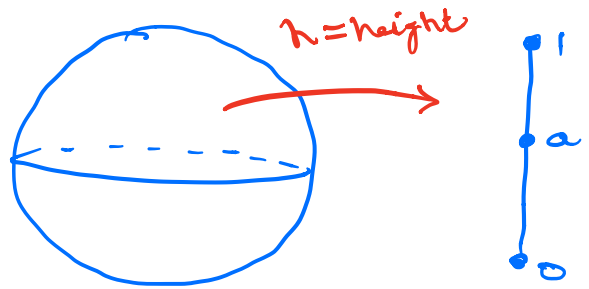
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2 Symplectic Topology

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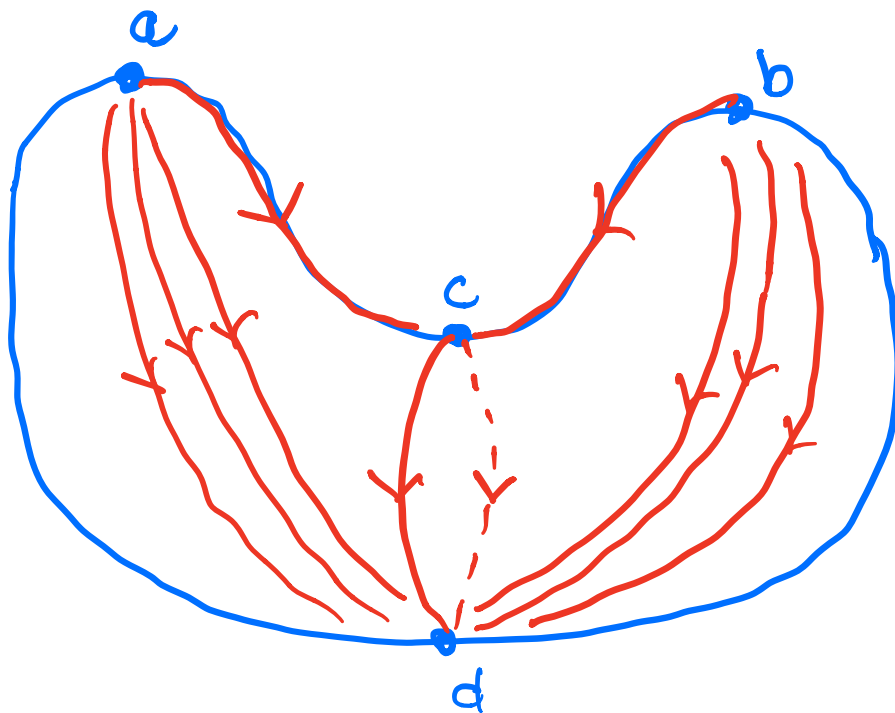
Morse Theory

Morse theory studies the topology of a smooth manifold via smooth functions on that manifold.



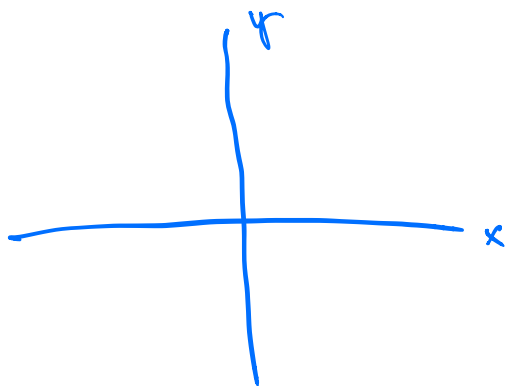
Morse Homology

Morse theory comes equipped with a homology theory that looks at flow lines connecting critical points.



Symplectic Topology

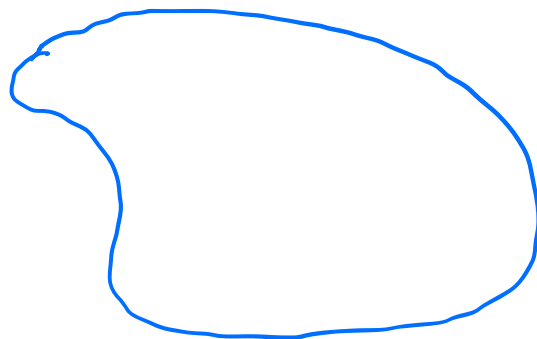
Symplectic topology studies smooth manifolds equipped with a symplectic form.



$$(\mathbb{R}^2, \omega_0 = dx \wedge dy)$$



locally
Symplectomorphic

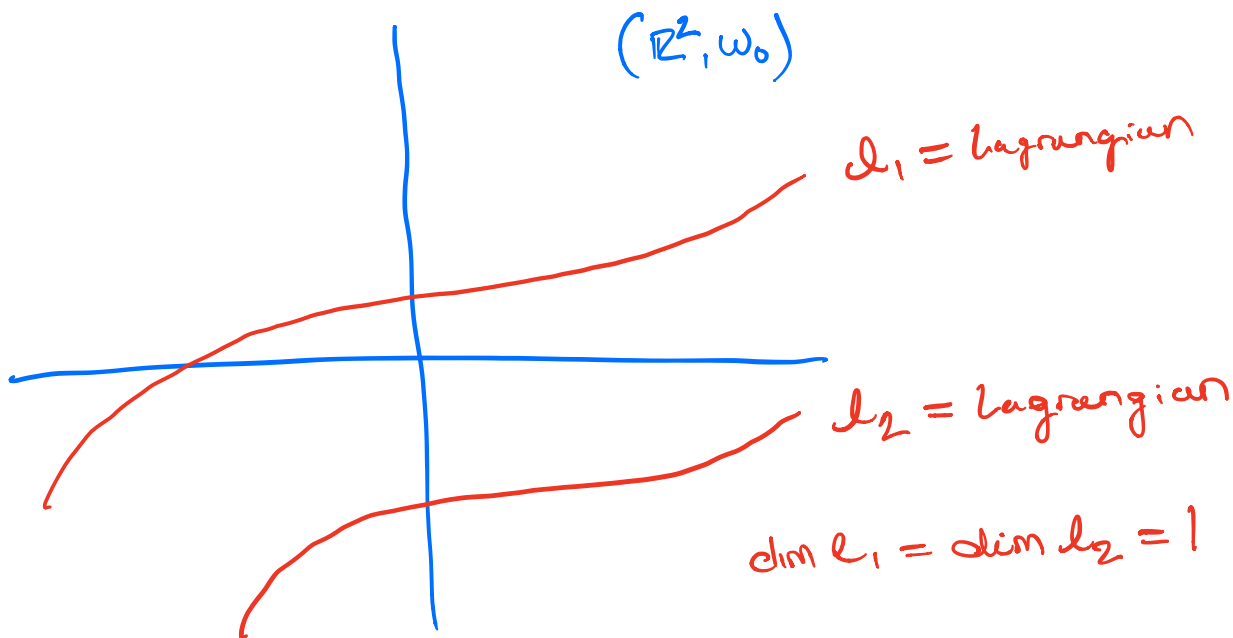


Some 2-manifold
w/ symplectic structure

Unlike Riemannian geometry, there are
no local symplectic invariants

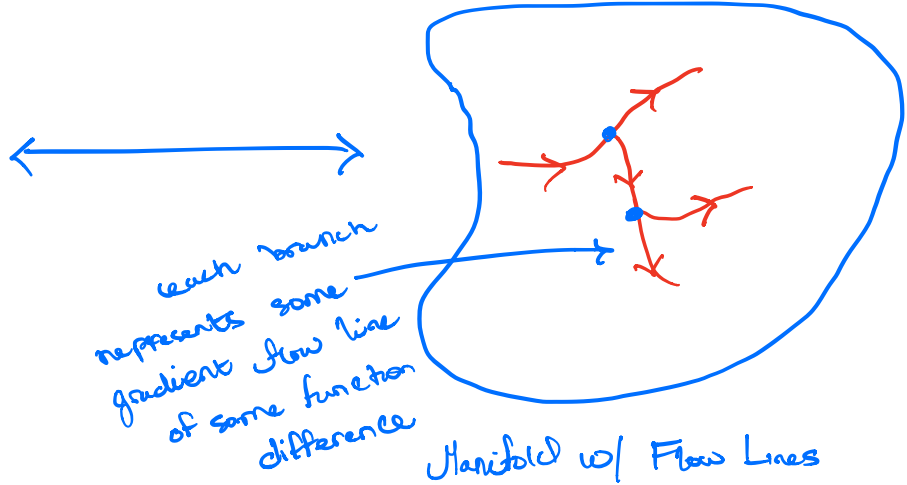
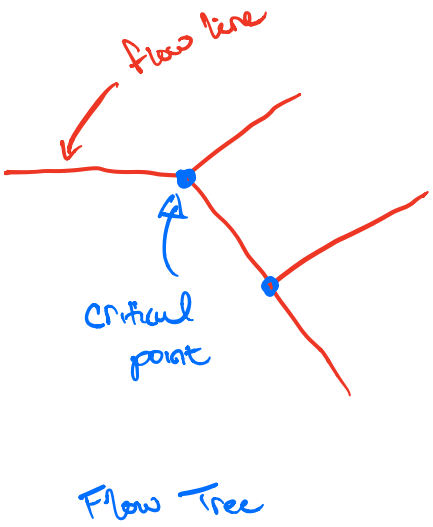
Lagrangian Submanifolds

Lagrangian submanifolds are maximal submanifolds such that the symplectic form vanishes identically.



Flow Trees

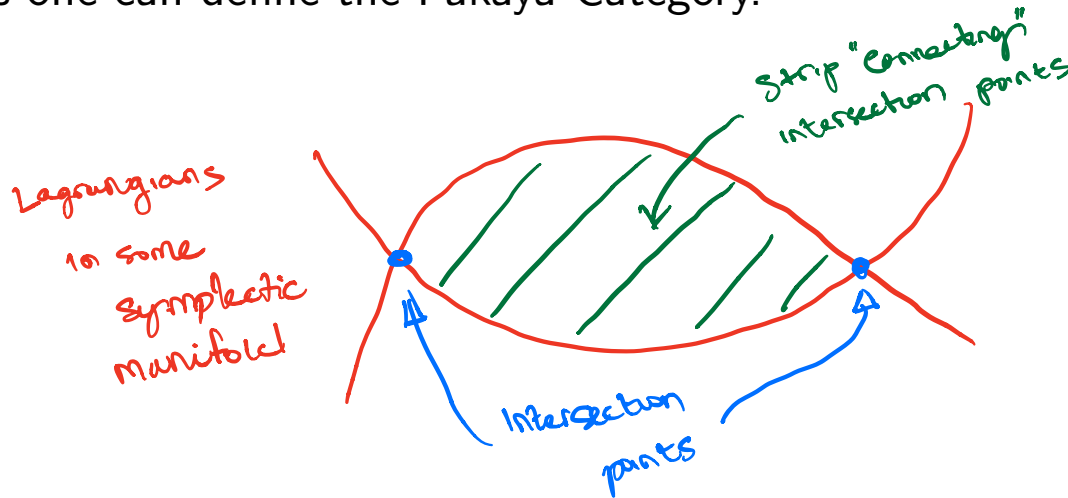
Flow trees are tree-like objects where each branch consists of flow lines.



Project: For what general defining data is the space of Morse flow trees compact Hausdorff?

Lagrangian Floer Homology and Fukaya Categories

Lagrangian Floer homology is an intersection theory for Lagrangian submanifolds that is unchanged by symplectic deformations. Using these ideas one can define the Fukaya Category.



Project: Producing isotopies for pairs of Lagrangians through categorical techniques.

Acknowledgements

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