

MTH 996: Exercises from Week 7

1. Formulate an appropriate notion of convergence for sequences of flowlines in Morse homology.
2. Formulate what “coherent orientations of Morse moduli spaces” means, and show that for S^1 there are two non-equivalent choices of orientations.
3. Given (M^{2n}, ω) a symplectic manifold, prove that n is the largest dimension a submanifold K with $\omega|_K = 0$ can have.
4. Given $\phi : (M, \omega) \rightarrow (M, \omega)$ a symplectomorphism, prove that the diagonal Δ and the graph Γ_ϕ of ϕ in $M^- \times M$ are Lagrangians. If M is exact and ϕ is Hamiltonian, prove that they are both exact Lagrangians.
5. Given (M, ω) symplectic, show that the space of almost complex structures compatible with ω is contractible.