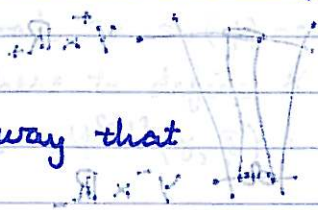


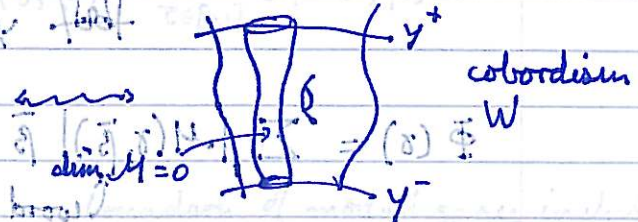
Invariance of Contact Homology

Tobias



W cobordism

In the same way that



differential in CH

$$\partial^2 = 0 : \begin{array}{ccc} \square & \xrightarrow{\partial} & \square \\ 1 & & 1 \end{array}$$

homomorphism $\Phi: CH^- \rightarrow CH^+$

$$\Phi(\partial\Phi + \Phi\partial) = 0$$

Similarly for Hamiltonian Floer Homology we obtain a homomorphism between $CF(H^0, J^0)$ and $CF(H^1, J^1)$.

$$d\Phi = \Phi d$$

analogous result for contact

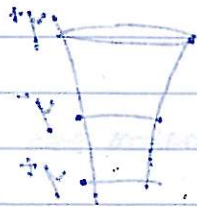
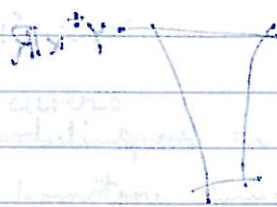
$$\Phi_{\tau=0} - \Phi_{\tau=1} = dK - Kd$$



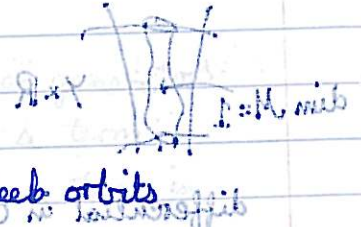
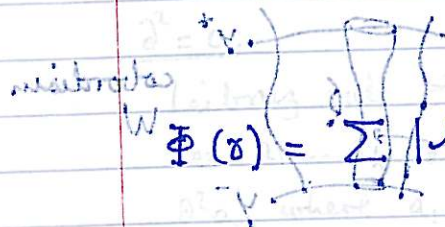
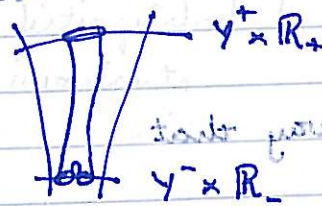
changing



you can compare with contact isotopy to get $\Phi_{\tau=0} = \Phi_{\tau=1}$ when $\tau=0, 1$ then before to get $\Phi_{\tau=0} = \Phi_{\tau=1}$ when $\tau=0, 1$



In contact homology: well defined for a given contact cobordism W



$$\Phi(\alpha) = \sum_{\beta} |\mathcal{M}(\alpha, \beta)| \beta$$

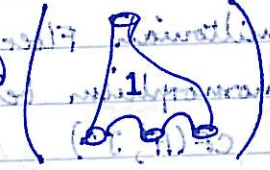
(word β of Reeb orbits)

$\Phi \circ \Psi = \Phi$ (multiplicative)

$$\Phi \circ \Psi = \Phi$$

Then $\Phi \circ \Psi = \Phi$

by counting



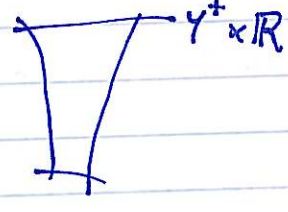
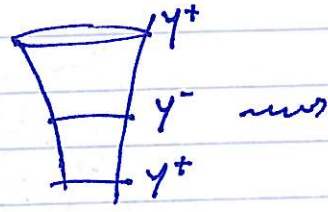
Isotopies of ξ induce cobordisms



ξ changing



You can compose with inverse isotopy to get $\Phi \circ \Psi$, then deform to get $Y^+ \times \mathbb{R}$, show $\Phi \circ \Psi = 1 = dK + Kd$



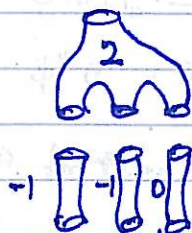
Given a 1-param. family of cobordisms $\mathcal{M}^\tau(\gamma, \bar{\beta})$ may degenerate to $\pi_1(-1)$ -curves at particular values of τ . Use these to define K , then consider the moduli space $\mathcal{M}^{[0,1]}(\gamma, \bar{\beta}) = \bigcup_{\tau \in [0,1]} \mathcal{M}^\tau(\gamma, \bar{\beta})$

$$\Phi_0 - \Phi_1 = dK + Kd$$



boundary of moduli space includes
-1 breaking curves $\sim dK + Kd$

Even if we ensure only -1 curves appear, and only one appears at each time $\tau \in [0,1]$, how can we rule out



We rule this out by making a ~~domain~~-dependent perturbation which depends on the domain and the point in the moduli space \Rightarrow only one end at a time can get a (-1)-curve

If ends of ^{curves} moduli space in $\mathcal{Y}_+ \times \mathbb{R}$ are ordered there seems to be a homotopy formula.

$$\Phi_1 = \Phi_0 e^{dK + Kd}$$

\uparrow power series expansion.

$(\int_{\partial M} \vec{k} \cdot d\vec{x}) = \int_{\partial M} \Phi_1 - \Phi_2 = \int d\alpha \neq \alpha d$

(linear expansion of volume)

volume calculation to volume - (1) or at storage of mass

at volume with K surface at each cell. \int of

volume space $M^3(x, y, z)$

$$k_1 + k_2 = \Phi_1 - \Phi_2$$

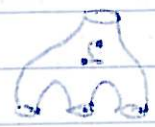
boundary of volume space includes

$k_1 + k_2$ can occur in a



also has volume surface - plane surface if

also appears at each time $\int \rho(x, y, z) dx dy dz$ how can we



independent of volume of

at each element in the volume which

point in the volume space is only at a

if ends of volume space in $K \times R$ are

volume formula

$$k_1 + k_2 = \Phi_1 - \Phi_2$$

power series expansion