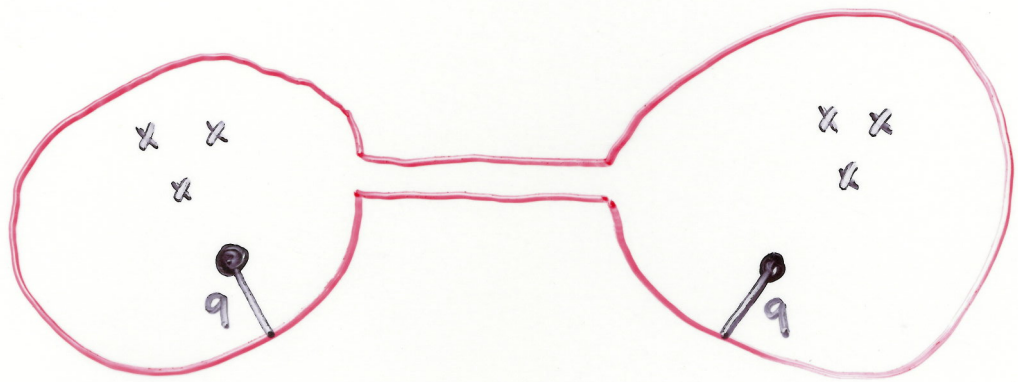


BRANES IN GENERALIZED COMPLEX 4-MFLDS

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JOINT w/

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OXFORD



Ex. 1

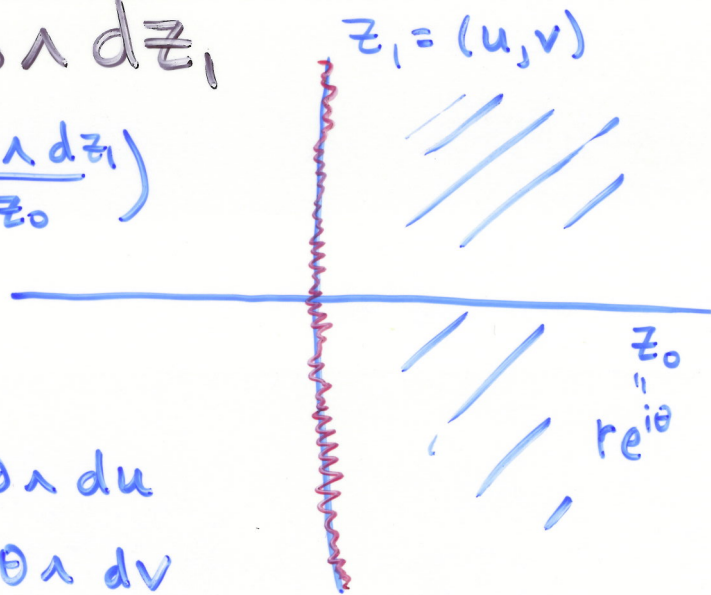
$$\rho = z_0 + dz_0 \wedge dz_1$$

$$= z_0 \left(1 + \frac{dz_0 \wedge dz_1}{z_0} \right)$$

$$= z_0 e^{B+iw}$$

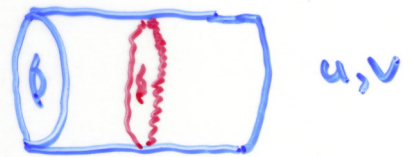
$$w = d \log r \wedge dv + d\theta \wedge du$$

$$B = d \log r \wedge du - d\theta \wedge dv$$



mod \mathbb{Z}^2

$D^2 \times T^2$



Lagrangian torus fibration

w/ type change at central fiber

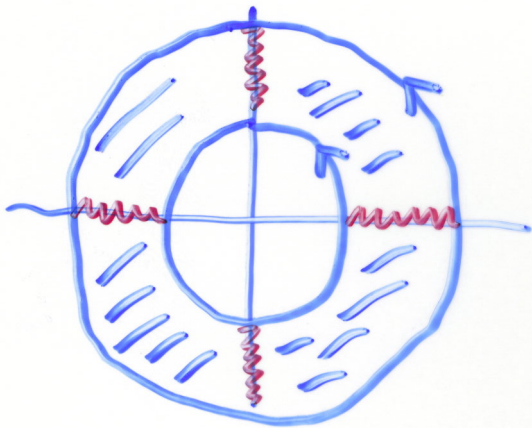
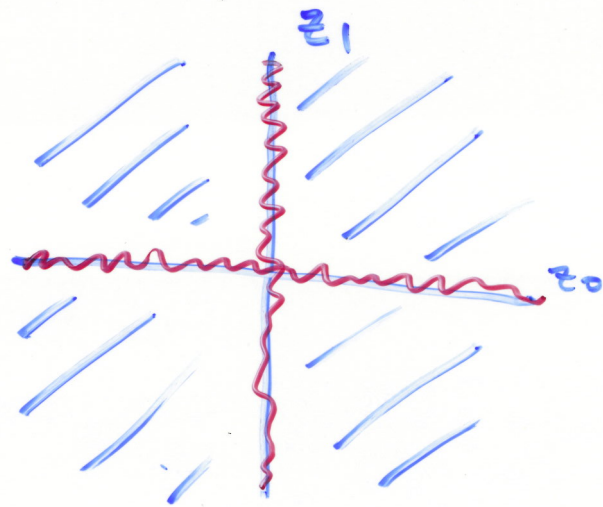
Ex. 2 $\rho = z_0 z_1 + dz_0 \wedge dz_1$

if $(z_0, z_1) \mapsto (2z_0, 2z_1)$

$\Rightarrow \rho \mapsto 4\rho$

$\Rightarrow \langle \rho \rangle$ invariant

$\downarrow \text{mod } \mathbb{Z}$



$= S^3 \times S^1$

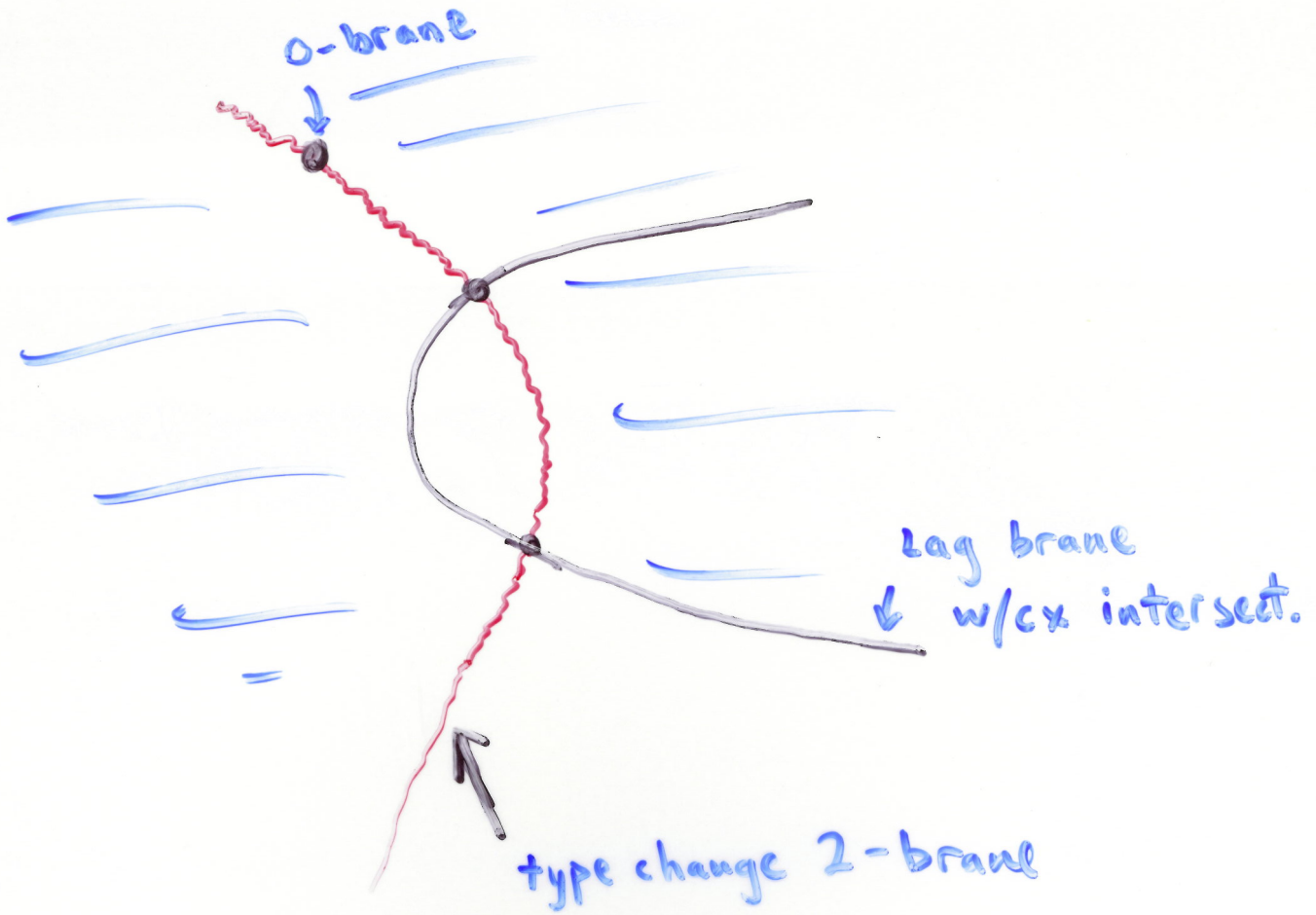
$= T^2 \rightarrow M^4$



$\cap S^3 =$  Hopf link

Q: Which links $L \subset S^3$ may be realized as type change loci on $S^3 \times S^1$?

0- and 2-branes

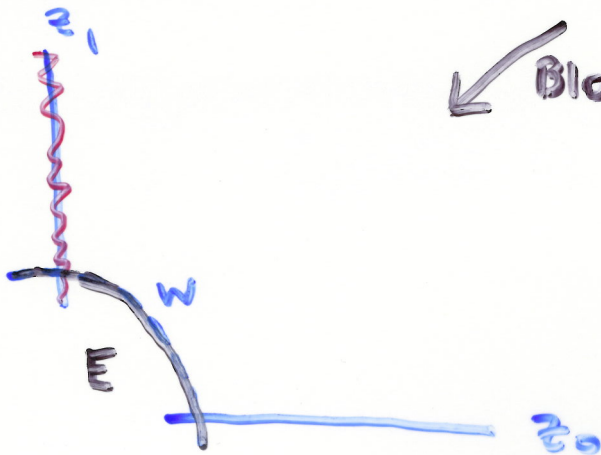


Blow-up of 0-brane

$$\rho = z_0 + dz_0 \wedge dz_1$$



Blow-up



$$\begin{cases} z_0 \mapsto W z_1 \\ z_1 \mapsto z_1 \end{cases}$$

$$\rho \mapsto W z_1 + z_1, dw \wedge dz_1$$

$$\cong W + dw \wedge dz_1$$

note: $dw \wedge dz_1|_E = 0 \Rightarrow E$ a 2-brane

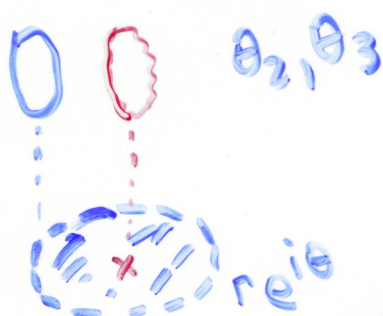
Thm: Any spherical 2-brane intersecting TCL at one pt \mathcal{M} , may be blown down.

Surgery :



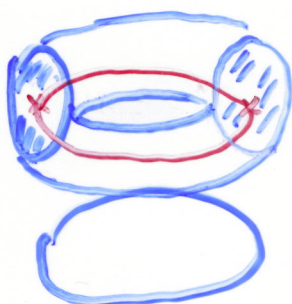
$$\omega = r dr \wedge d\theta + d\theta_2 \wedge d\theta_3$$

$$D^2 \times S^1 \times S^1$$



$$\omega = d \log r \wedge d\theta_3 + d\theta \wedge d\theta_2$$

$$D^2 \times S^1 \times S^1$$



$$\psi(r, \theta_1, \theta_2, \theta_3) = (\sqrt{\log r^2}, \theta_3, \theta_2, -\theta_1)$$

C^∞ - Log transform
(Gompf - Mrowka)

Q: Are there obstructions
to \exists g.c.x str. on
almost c.x 4-mflds?

Thanks!