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Research area: Contact geometry and low-dimensional topology

At the moment I think mainly about:

- ★ Contact surgery along Legendrian knots
- ★ Open books on 4-manifolds
- ★ Alternating surgeries and the SnapPy census knots

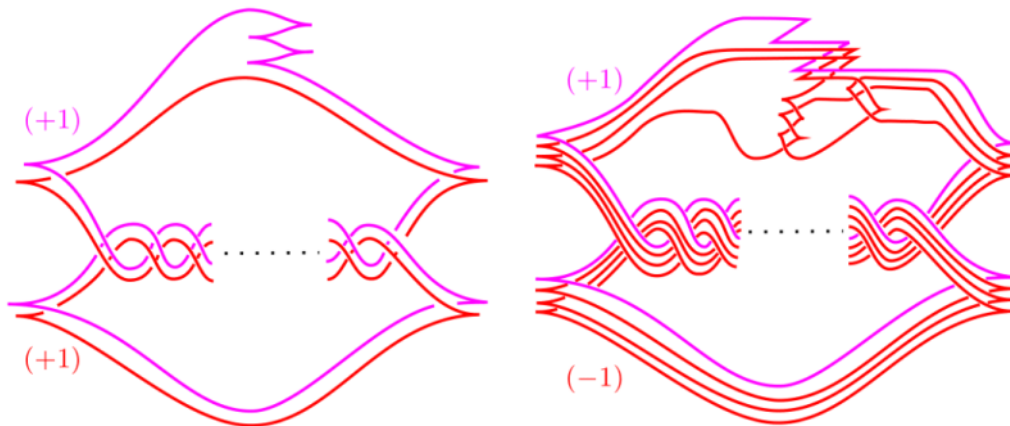


Contact surgery numbers:

(joint with John Etnyre and Sinem Onaran)

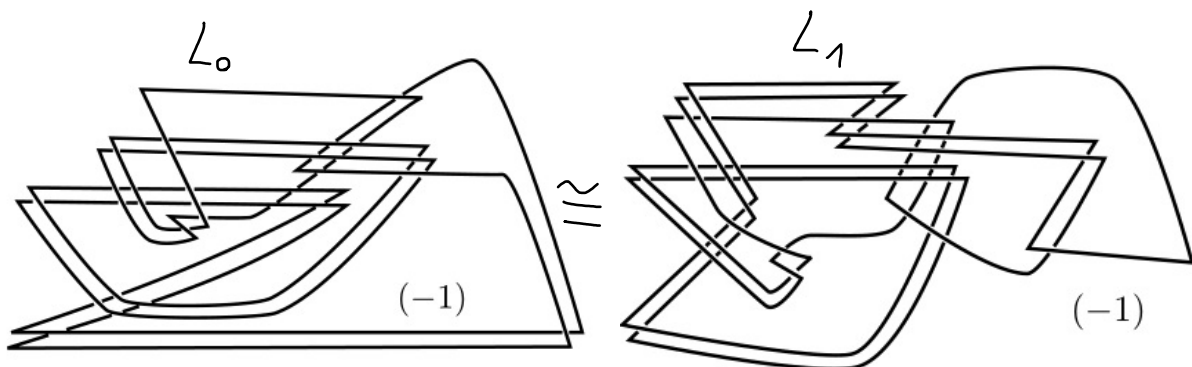
$$CS_{\pm 1}(M, \xi) := \min \left\{ |L| : \begin{array}{l} (M, \xi) \text{ IS CONTACT} \\ (\pm 1)\text{-SURGERY ON } L \subset (S^3, \xi_{\text{std}}) \end{array} \right\}$$

EX: $CS_{\pm 1}(S^3, \xi) \leq 2$



Stein traces and characterizing slopes

(joint with Roger Casals and John Etnyre)



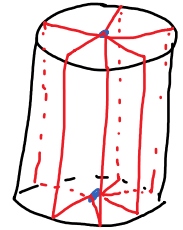
Open books on 4-manifolds:

(joint with Felix Schmäsche)

EX:

$$D^n = \begin{array}{c} \text{P} \\ \circ \\ \text{B} \end{array} \times D^{n-2}$$

$$S^{n-1} = \partial D^n$$



Classification of open books is known in all dimensions except 4. [Quinn]

We study (in dimension 4):

- ★ Stable existence results
- ★ Relations to trisections

Alternating surgeries:

(joint with Ken Baker and Duncan McCoy)

$r \in \mathbb{Q}$ IS CALLED ALTERNATING SLOPE FOR $K \subset S^3$ $(\Rightarrow)$

$S_K^3(r) = \text{DBC}(L)$ FOR $L \subset S^3$ ALTERNATING

Analyzing Dunfield's 1267 SnapPy census knots:

- ★ Alternating surgeries
- ★ QA surgeries
- ★ DBC surgeries
- ★ Exceptional symmetry slopes
- ★ Braid words
- ★ Invariants

Example: o9_30634



A hyperbolic L-space knot which is not braid positive.