

# Workshop CAST 2020

Antwerp (Belgium), Feb 6-8, 2020

---

## *Immersed Floer cohomology, mean curvature flow, and Lagrangian surgery*

**Joseph Palmer**  
**(Antwerp)**

We study the behaviour of (immersed) Floer cohomology under coupled mean curvature & Kähler Ricci flow. Given an unobstructed immersed Lagrangian we prove (under some conditions) a lower bound on the time for which the immersed Floer cohomology is invariant under the flow, as long as the flow exists, and in particular show that the Floer cohomology is invariant as the immersion passes through a self-tangency. Furthermore, in some cases when the Lagrangian becomes obstructed (if the  $q$ -valuation of the Maurer-Cartan solution at a self-intersection point goes to zero) we show how performing a Lagrangian surgery allows the flow to be continued in such a way that the Floer cohomology instead remains unobstructed and is invariant. This surgery prevents certain geometric singularities in the mean curvature flow before they can form. This is partially motivated by a conjecture of Joyce.

This work is joint with Chris Woodward, see the preprints [arXiv:1903.01943](https://arxiv.org/abs/1903.01943) and [arXiv:1804.06799](https://arxiv.org/abs/1804.06799).