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Surgery formulas in Heegaard Floer Theory

Part 1 . I will give a short introduction to Heegaard Floer homology, and then describe a formula (due to Ozsvath-Szabo) for computing the Heegaard Floer homology of surgery on a knot in terms of the Floer homology of the knot. I will discuss the case of the trefoil knot in detail.

Part 2. I will describe a formula (joint work with Peter Ozsvath) for computing the Heegaard Floer homology of surgery on a link in terms of data associated to the link. I will focus on the example of the Hopf link. The link surgery formula is a key ingredient in showing that the Heegaard Floer homology groups of arbitrary 3-manifolds are algorithmically computable.