MTH 996: Exercises from Week 2

1. Partition the generators of $CF^\circ(\mathcal{H})$ for $\mathcal{H}$ the Heegaard diagram shown in Figure 2 of [OSz06] in spin^c structures.

2. Given two nowhere vanishing vector fields on Y^3, prove that if $\delta^r(v_i)$ is the induced class in $H^2(Y)$ defined in class, then $\delta^r(v_1) - \delta^r(v_2)$ is independent of the choice of trivialization of TY.

3. Check the assertion made in class that given a nowhere vanishing vector field v on Y, $\delta^r(v) - \delta^r(-v)$ is the first Chern class of the orthogonal complement $v^\perp$.

4. Determine the chain complexes $\widehat{CFK}(\mathcal{H})$ and $CFK^-(\mathcal{H})$ associated to the pringle-chip diagram for the trefoil.

References

[OSz06] Peter S. Ozsváth and Zoltán Szabó, *An introduction to Heegaard Floer homology*, Floer homology, gauge theory, and low-dimensional topology, Clay Math. Proc., vol. 5, Amer. Math. Soc., Providence, RI, 2006, pp. 3–27.