

Heegaard Floer homology and fibred three-manifolds

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Abstract: Heegaard Floer homology is a theory introduced by Ozsváth and Szabó as an analogue to Seiberg-Witten theory. For knots in 3-manifolds, this theory is refined to a filtered version, called knot Floer homology. Ozsváth and Szabó conjectured that knot Floer homology detects fibred knots in the three-sphere. In this talk, we will discuss a proof of this conjecture, based on the works of Paolo Ghiggini and of the speaker. In fact, one can show that Heegaard Floer homology detects whether a 3-manifold is fibred, namely, whether it is a surface bundle over the circle. Some applications will also be discussed.