A LAGRANGIAN-FLOER THEORY FOR TRACELESS SU(2) CHARACTER VARIETIES OF TANGLES

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I will discuss ongoing joint work with Matt Hedden and Chris Herald constructing a link invariant from the Lagrangian-Floer intersection theory for $SU(2)$ character varieties associated to a tangle decomposition of a link. To a punctured sphere one associates the symplectic variety of $SU(2)$ representations of its fundamental group which are traceless around the punctures, and to a tangle in a 3-ball we associate the immersed Lagrangian submanifold of $SU(2)$ representations of its fundamental group which are traceless on meridians. In the case of 2-tangle decompositions this leads to an elementary and sometimes computable $\mathbb{Z}/4$ graded invariant, which we conjecture equals the singular instanton homology of Kronheimer-Mrowka.

The construction will be outlined, examples given, and exact sequences and relationships to Khovanov homology will be discussed.

References

[1] M. Hedden, C. Herald, and P. Kirk, "The pillowcase and perturbations of traceless representations of knot groups." *Geom. Topol.* 18 (2014), no. 1, 211-287
[2] M. Hedden, C. Herald, and P. Kirk, "The pillowcase and perturbations of traceless representations of knot groups II: a Lagrangian-Floer theory in the pillowcase." `http://arxiv.org/abs/1501.00028`

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