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Stein fillings and SU(2) representations

In recent work, Sivek and I defined invariants of contact 3-manifolds with boundary in sutured instanton Floer homology. I will sketch the proof of a theorem about these invariants which is analogous to a result of Plamenevskaya in Heegaard Floer homology: if a 4-manifold admits several Stein structures with distinct Chern classes, then the invariants of the induced contact structures on its boundary are linearly independent. As a corollary, we conclude that if a homology sphere Y admits a Stein filling which is not a homology ball, then its fundamental group admits a nontrivial representation to SU(2). This is joint work with Steven Sivek.