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John A Baldwin*, john.baldwin@bc.edu, and **Steven Sivek**. *Progress and questions in instanton Floer homology.*

Instanton Floer homology stands out among Floer homological invariants of 3-manifolds for several reasons. For one, it is transparently related to the fundamental group in a way that isn't true of Heegaard Floer homology, monopole Floer homology, and embedded contact homology. Moreover, its connection with the latter three invariants (which are isomorphic to one another) remains elusive. Finally, and in a related vein, instanton Floer homology is generally very difficult to compute. We will discuss progress towards computing framed instanton homology, some topological applications, and some natural questions and speculation that arise from this line of research. Much of this is joint work with Steven Sivek. (Received August 28, 2020)