On the homology of reduced monopole moduli spaces

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Abstract.

By a theorem of Donaldson, the moduli space M_k of based, charge-k $SU(2)$ monopoles can be realised as a space of rational functions. Under this guise it was studied by Segal, who proved that it approximates $\Omega^2 S^3$ homotopically as k goes to infinity, and later by Cohen-Cohen-Mann-Milgram, who proved that each M_k splits stably as a wedge of Snaith summands of $\Omega^2 S^3$, which completely determines its homology.

For certain physical questions one is more interested in the reduced moduli space X_k of *strongly centred monopoles*, which is homotopy equivalent to the universal cover of M_k. Its rational homology was calculated by Segal-Selby, and is much richer than that of M_k, which is rationally a circle. I will describe a calculation of its integral homology, which lifts to a stable splitting of each X_k compatible with the deck action and with stabilisation. The splitting consists of one summand that carries all of the monodromy and recovers Segal-Selby rationally, together with another summand that stabilises to the universal cover of $\Omega^2 S^3$.