

# Homological stability for asymptotic monopole moduli spaces

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## Abstract.

Magnetic monopoles were introduced by Dirac in 1931 to explain the quantisation of electric charges. In his model, they are singular solutions to an extension of Maxwell's equations allowing non-zero magnetic charges. An alternative model, developed by 't Hooft and Polyakov in the 1970s, is given (after a certain simplification) by smooth solutions to a different set of equations, the *Bogomolny equations*, whose moduli space of solutions has connected components  $M_k$  indexed by positive integers  $k$ . These have been intensively studied, for example by Atiyah and Hitchin (the geometry of the  $k = 2$  moduli space), by Segal (stabilisation of their homotopy groups) and by Cohen, Cohen, Mann and Milgram (describing their stable homotopy types via braid groups).

A partial compactification of  $M_k$  has recently been constructed by Kottke and Singer, whose boundary strata we call *asymptotic monopole moduli spaces*. I will describe recent joint work with Ulrike Tillmann ([arXiv:2212.11799](https://arxiv.org/abs/2212.11799)) in which we prove the existence of stability patterns in the homology of these spaces.

## References.

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