Homological stability for asymptotic monopole moduli spaces

Martin Palmer-Anghel // EPFL Topology Seminar // 31 May 2022

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, notably by Segal (stabilisation of their homotopy groups) and Cohen-Cohen-Mann-Milgram (describing their stable homotopy types in terms of braid groups).

A compactification of M_k has recently been proposed by Fritzsch-Kottke-Singer, whose boundary strata we call *asymptotic monopole moduli spaces*. I will describe ongoing joint work with Ulrike Tillmann in which we study stability patterns in the homology of these spaces.