MONOPOLE MODULI SPACES ON ASYMPTOTICALLY EUCLIDEAN DOMAINS

The study of monopoles has its origin in (and derives its name from) Dirac's study of a formal magnetic analogue to the electric field point source solution to Maxwell's equations in $\mathbb{R}^3$. Polyakov and 't Hooft noted that analogous monopole solutions exist in the context of non-abelian gauge theory, where, in contrast to the linear, abelian theory, they are actually smooth. The moduli space of such solutions has interesting features including a Kahler metric and a notion of "charge" which is constrained to be integral, even though this is a classical and not a "quantum" theory.

I'll give a brief overview of the monopole problem and discuss some of my own work, in which I investigate the moduli space on more general domains than $\mathbb{R}^3$ – asymptotically (locally) Euclidean manifolds, or those with so-called "scattering" metrics – utlizing the tools of geometric microlocal analysis