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Christopher M. Herald* (herald@unr.edu), Department of Math and Stat, MS084, University of Nevada, Reno, Reno, NV 89557. *SU(3) flat moduli spaces of knot complements*. Preliminary report.

The topic of this talk is the space of flat (or perturbed flat) $SU(3)$ connections on a knot complement. The $SU(3)$ flat moduli spaces of closed 3-manifolds (with the homology of S^3) have been used to define an $SU(3)$ generalization of Casson's invariant.

In order to work toward a surgery formula for the $SU(3)$ Casson invariant of homology spheres, it is necessary to obtain a good understanding of the flat moduli space of knot complements.

Whereas on a homology sphere, the only irreducible flat connections (besides the trivial one) are direct sums of rank two plus rank one connections, knot complements also admit nontrivial abelian connections. Furthermore, even the irreducible flat connections are abelian on the boundary torus, and this difference in level of reducibility complicates the Kuranishi method for understanding the local structure of the moduli space. This talk will relate work in progress on the transversality issues surrounding these moduli spaces and how they fit together. (Received February 07, 2006)