1125-14-2780 **Neal Livesay*** (nlives1@lsu.edu), 2150 Duncan Drive, Baton Rouge, LA 70802. *Moduli spaces of flat* GSp-*connections.* Preliminary report.

A fundamental problem in the study of differential equations is the classification of first-order singular differential operators up to gauge equivalence. A modern version of this problem, rephrased in the language of algebraic geometry, involves the construction of moduli spaces of meromorphic G-connections (or, equivalently, flat G-bundles) on $\mathbb{CP}^1$, for G a reductive group. P. Boalch (2001) has constructed moduli spaces for GL_n-connections in the case that the connection matrix at each singularity - an element of the formal loop algebra $\mathfrak{gl}_n(\mathbb{C}((z)))$ - is diagonalizable. More recently, C. Bremer and D. Sage (2012) have used representation-theoretic methods to develop a new approach to studying G-connections. Furthermore, they have used this approach to construct moduli spaces of GL_n-connections with certain classes of non-diagonalizable connection matrices (such as the generalized Airy connection matrices). In this talk, I will describe my recent work to further refine this theory for the study of GSp_{2n}-connections, and demonstrate the theory for some small rank examples. (Received September 20, 2016)