

Meeting: 1007, Santa Barbara, California, SS 14A, Special Session on Algebraic Geometry and Combinatorics

1007-14-114 **Wee Liang Gan** and **Victor Ginzburg*** (ginzburg@math.uchicago.edu), University of Chicago, Dept. Mathematics, Chicago, IL 60637. *Almost-commuting variety, D-modules, and Cherednik Algebras.*

We study a scheme M closely related to the set of pairs of n by n matrices with rank 1 commutator. We show that M is a reduced complete intersection with $n+1$ irreducible components, which we describe.

There is a distinguished Lagrangian subvariety N in M . We introduce a category, C , of D -modules whose characteristic variety is contained in N . Simple objects of that category are analogous to Lusztig's character sheaves. We construct a functor of Quantum Hamiltonian reduction from category C to the category O for type A rational Cherednik algebra. It will be shown in a subsequent paper that this functor is close to being an equivalence. Thus, representation theory of rational Cherednik algebras turns out to be 'governed' by the theory of D -modules. (Received February 12, 2005)