BOSTON UNIVERSITY GEOMETRY AND PHYSICS SEMINAR

HYPERKAHLER GEOMETRY AND QUANTUM GROUPS

Andrew Neitzke Yale University

CCDS 365, Mar 22, 2023, 4-5pm

Tea: 3:45pm in Room 365

Abstract: Various objects of interest in Lie theory admit geometric structures. For example, given a complex simple Lie algebra g, the dual g* admits a canonical complex Poisson structure; its symplectic leaves are complex coadjoint orbits, and on these leaves the complex symplectic structures can be upgraded to hyperkahler metrics.

I will describe a conjectural nonlinear version of this story, as follows. Given a complex simple Lie group G, there is a "dual" group G* which admits a complex Poisson structure. I will explain how one can conjecturally construct hyperkahler metrics on open subsets of the symplectic leaves of G*, and a corresponding geometric structure on the representations of the quantum group $U_q(g)$ when q is a root of unity. Time permitting, I will briefly describe the relation of the construction to supersymmetric quantum field theory.

Part of the talk is joint work with Davide Gaiotto, Greg Moore and Fei Yan, and another part is ongoing work of Danny Nackan; the talk is also related to ongoing work of Xiaomeng Xu and Yan Zhou.

See http://math.bu.edu/research/geom/seminar.html or contact Yu-Shen Lin (yslin@bu.edu) or Brian Williams (bwill22@bu.edu) for more information.