

MATHEMATICS COLLOQUIUM

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"On the Grünbaum Conjecture"

Wednesday, May 21st, 2008

4:10-5:00pm, tea time @ 3:40

Surge 284

Abstract: Graded Clifford algebras are non-commutative algebras that have been known since at least the mid-20th century, and one can read off certain properties of such an algebra from certain commutative geometric data associated to the algebra. In particular, a standard result is that a graded Clifford algebra C is quadratic and Artin-Schelter regular if and only if a certain quadric system associated to C is base-point free. Recently, T. Cassidy and M. Vancliff introduced a generalization of such algebras, so called graded skew Clifford algebras, and they used concepts from non-commutative algebraic geometry (in the spirit of M. Artin, J. Tate and M. Van den Bergh) to associate non-commutative geometric data to a graded skew Clifford algebra. They proved that such an algebra A is quadratic and Artin-Schelter regular if and only if a certain non-commutative quadric system associated to A is normalizing and base-point free.

This algebra-geometry correspondence has led to the construction of new quadratic regular algebras of global dimension four (i.e., new quantum projective 3-spaces), thereby contributing to the open problem of classifying all such algebras. In this talk, the algebra-geometry correspondence in the setting of graded Clifford algebras will be our main focus, and the setting of graded skew Clifford algebras will be introduced.